

The Milbank Memorial Fund
QUARTERLY

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IN THIS ISSUE

THE article "Change With Age in Susceptibility to Minor Respiratory Illness" by Jean Downes describes change in susceptibility at specific ages in a population which was observed for three successive years.

It was concluded from this study that stability of resistance or change in susceptibility to respiratory illness is different for young children compared with adults. During the early school ages, resistance to respiratory disease is being established. When adult life is reached there is a tendency for persons who suffer frequent attacks of respiratory illness to remain over a period of time in that class.

• • •

Although the use of antibiotics in the treatment of pneumonia has caused a remarkable decrease in mortality from that disease, there is no evidence that the incidence of pneumonia has decreased. Data on pneumonia obtained in a study in Pleasantville and Mt. Kisco, New York, are presented in a paper entitled "Incidence of Pneumonia in Two Communities in New York State" by Doris Tucher.

The paper places an especial emphasis upon a description of the households in which pneumonia occurred during the three years of the study. Attention was paid to (1) the position of the case in the household; (2) the tendency for households to be repeaters; (3) the occurrence of multiple cases in the household; and (4) the illness record of the pneumonia household and of the persons who suffered an attack of the disease.

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One of the hypotheses included for testing in the Indianapolis Study was: "The stronger the feeling of personal inadequacy, the higher the proportion of couples practicing contraception effectively and the smaller the planned families." The analysis of the data on this hypothesis is presented in an article "The Interrelation of Fertility, Fertility Planning, and Feeling of Personal Inadequacy," by Charles F. Westoff and Clyde V. Kiser. This is the seventeenth of a series of reports appearing under the general title "Social and Psychological Factors Affecting Fertility."

CHANGE WITH AGE IN SUSCEPTIBILITY TO MINOR RESPIRATORY ILLNESS

JEAN DOWNES¹

ONE of the striking epidemiological characteristics of the minor respiratory illnesses is the variation of their incidence with age. The attack rate is highest during the early years of life, declines throughout the school ages and until adult life is reached. Then the incidence maintains a fairly constant level. This characteristic, variation in incidence with age, has been noted in all morbidity studies which have

Table 1. Mean number of respiratory illnesses per person in each of the three successive years of observation among persons at specific ages, Pleasantville and Mt. Kisco combined.¹

AGE AS OF FIRST YEAR	NUMBER OF PERSONS n	YEAR OF OBSERVATION					
		First: 1946-1947		Second: 1947-1948		Third: 1948-1949	
		Mean Number of Respiratory Illnesses	Standard Deviation	Mean Number of Respiratory Illnesses	Standard Deviation	Mean Number of Respiratory Illnesses	Standard Deviation
5 Years	79	3.08±0.23	2.02	2.64±0.19	1.67	2.18±0.19	1.69
6	90	2.79±0.20	1.88	2.28±0.19	1.77	2.17±0.20	1.86
7	80	2.39±0.18	1.61	2.20±0.18	1.61	1.74±0.17	1.49
8	104	2.28±0.15	1.58	1.80±0.13	1.34	1.88±0.16	1.63
9	70	1.93±0.19	1.56	1.77±0.19	1.63	1.67±0.20	1.64
10	75	1.76±0.19	1.65	1.48±0.16	1.35	1.65±0.16	1.38
11	80	1.80±0.15	1.38	1.40±0.16	1.48	1.61±0.17	1.54
12	70	1.53±0.16	1.36	1.64±0.18	1.51	1.51±0.18	1.54
13	77	1.79±0.17	1.49	1.26±0.14	1.24	1.42±0.16	1.44
14	75	1.71±0.16	1.41	1.63±0.17	1.47	1.85±0.18	1.52
15	93	1.40±0.13	1.29	1.24±0.14	1.37	1.13±0.12	1.11
16	33	1.70±0.28	1.60	1.45±0.24	1.40	1.21±0.18	1.01
17	38	0.97±0.18	1.12	1.05±0.20	1.24	0.74±0.15	0.91
18	26	1.15±0.27	1.38	1.00±0.21	1.07	0.77±0.25	1.28
19-29	87	1.28±0.13	1.24	1.14±0.13	1.20	1.14±0.15	1.43
30-34	164	1.21±0.09	1.09	1.17±0.08	1.05	1.27±0.09	1.16
35-39	291	1.22±0.07	1.19	1.14±0.07	1.17	1.21±0.07	1.24
40-44	281	1.09±0.07	1.17	0.94±0.07	1.13	0.98±0.07	1.10
45-49	179	0.87±0.07	0.92	0.85±0.07	0.90	0.67±0.07	0.91
50+	104	0.84±0.09	0.93	0.77±0.10	0.98	0.56±0.08	0.78

¹ School years: September, 1946-May, 1947; September, 1947-May, 1948; and September, 1948-May, 1949.

¹ From the Milbank Memorial Fund. This is the sixth in a series of papers dealing with a study of acute respiratory illness.

included records of the common cold and other minor respiratory illnesses (1, 2, 3, 4).

It seems quite logical to assume that the variation of incidence of respiratory illness with age is due for the most part to change in the susceptibility of the host to the organism or organisms responsible for such illness. Degree of contact with the community appears to be a factor which may have an influence upon change in susceptibility of the host. For example, preschool children have the highest attack rate from respiratory illness but they have considerably less contact with the community than do school-age children or adults. As the environment becomes broader with corresponding greater opportunities for contact with respiratory illness, the incidence of

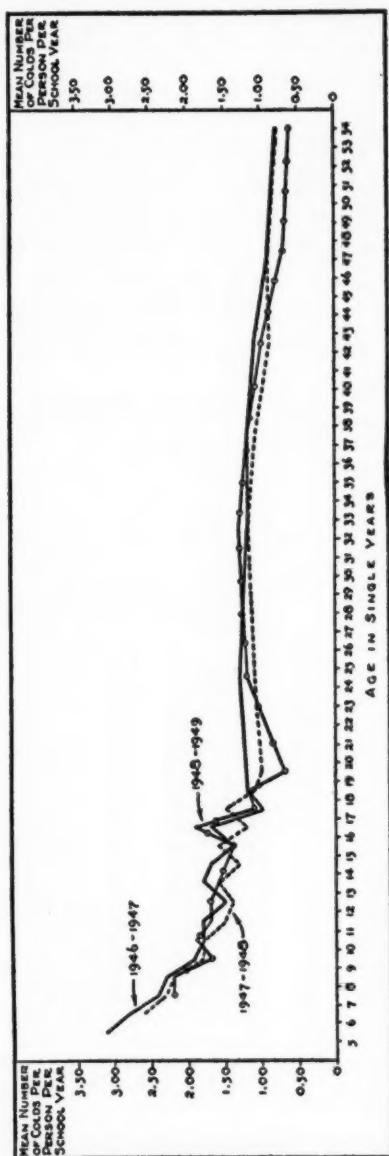


Fig. 1. Mean number of attacks per person at specific ages in each of three successive school years.

such illness declines. On the other hand decline in susceptibility to these diseases may be due also to physiological change in the host which accompanies growth and physical development.

A three-year study of acute respiratory illness in two communities, Pleasantville and Mt. Kisco in Westchester County, New York, provides data which make it possible to describe in detail change or lack of change in susceptibility to minor respiratory illnesses. The purpose of this report is to present these data.

DATA AND METHOD OF STUDY

The data and method of the study of respiratory illness in the two communities in Westchester County, New York, have been fully described in previous reports (5, 6, 7). Briefly, the

Table 2. Variance in minor respiratory illness among persons at age of first observation. (Three years of observation.) Pleasantville and Mt. Kisco combined. September, 1946-May, 1949.

SOURCE OF VARIATION	DEGREES OF FREEDOM	VARIATION OR SUM OF SQUARED DEVIATIONS	VARIANCE (MEAN SQUARE)	RATIO OF VARIANCE	P*
5 YEARS					
Between Year Means	2	31.92	15.96	10.04	<.01
Among Person Means	78	527.06	6.76	4.25	<.01
Residual	156	248.08	1.59		
Total		807.06			
6 YEARS					
Between Year Means	2	19.82	9.91	6.93	<.01
Among Person Means	89	659.37	7.41	5.18	<.01
Residual	178	254.18	1.43		
Total		933.37			
7 YEARS					
Between Year Means	2	17.91	8.96	6.95	<.01
Among Person Means	79	391.18	4.95	3.84	<.01
Residual	158	204.09	1.29		
Total		613.18			
8 YEARS					
Between Year Means	2	13.66	6.83	5.46	<.01
Among Person Means	103	463.95	4.50	3.60	<.01
Residual	206	258.34	1.25		
Total		735.95			

Table 2.—(Continued)

SOURCE OF VARIATION	DEGREES OF FREEDOM	VARIATION OR SUM OF SQUARED DEVIATIONS	VARIANCE (MEAN SQUARE)	RATIO OF VARIANCE	P*
9 YEARS					
Between Year Means	2	2.35	1.18	4.63	<.01
Among Person Means	69	380.11	5.51		
Residual	138	164.32	1.19		
Total		546.78			
10 YEARS					
Between Year Means	2	3.00	1.50	1.24	>.05
Among Person Means	74	302.38	4.09	3.38	<.01
Residual	148	179.00	1.21		
Total		484.38			
11 YEARS					
Between Year Means	2	6.41	3.21	3.38	.01—.05
Among Person Means	79	367.40	4.65	4.89	<.01
Residual	158	149.59	0.95		
Total		523.40			
12 YEARS					
Between Year Means	2	0.70	0.35	3.87	<.01
Among Person Means	69	299.03	4.33		
Residual	138	153.97	1.12		
Total		453.70			
13 YEARS					
Between Year Means	2	11.54	5.77	4.93	<.01
Among Person Means	76	273.06	3.59	3.07	<.01
Residual	152	177.12	1.17		
Total		461.72			
14 YEARS					
Between Year Means	2	1.98	0.99	4.39	<.01
Among Person Means	74	334.46	4.52		
Residual	148	152.02	1.03		
Total		488.46			
15 YEARS					
Between Year Means	2	3.41	1.71	1.73	>.05
Among Person Means	92	262.93	2.86	2.89	<.01
Residual	184	182.59	0.99		
Total		448.93			
16 YEARS					
Between Year Means	2	3.88	1.94	1.90	>.05
Among Person Means	32	117.21	3.66	3.59	<.01
Residual	64	65.45	1.02		
Total		186.54			

Table 2.—(Continued)

SOURCE OF VARIATION	DEGREES OF FREEDOM	VARIATION OR SUM OF SQUARED DEVIATIONS	VARIANCE (MEAN SQUARE)	RATIO OF VARIANCE	P*
17 YEARS					
Between Year Means	2	2.05	1.03	1.49	> .05
Among Person Means	37	84.96	2.30	3.33	< .01
Residual	74	51.28	0.69		
Total		138.29			
18 YEARS					
Between Year Means	2	1.95	0.98		
Among Person Means	25	69.28	2.77	2.64	< .01
Residual	50	52.72	1.05		
Total		123.95			
19-29 YEARS					
Between Year Means	2	1.02	0.51		
Among Person Means	86	305.80	3.56	4.62	< .01
Residual	172	132.98	0.77		
Total		439.80			
30-34 YEARS					
Between Year Means	2	0.78	0.39		
Among Person Means	163	337.06	2.07	2.62	< .01
Residual	326	257.89	0.79		
Total		595.73			
35-39 YEARS					
Between Year Means	2	1.14	0.57		
Among Person Means	290	765.72	2.64	3.11	< .01
Residual	580	490.19	0.85		
Total		1,257.05			
40-44 YEARS					
Between Year Means	2	3.21	1.61	2.30	> .05
Among Person Means	280	689.67	2.46	3.51	< .01
Residual	560	392.12	0.70		
Total		1,085.00			
45-49 YEARS					
Between Year Means	2	4.32	2.16	3.86	.01—.05
Among Person Means	178	245.54	1.38	2.46	< .01
Residual	356	199.02	0.56		
Total		448.88			
50+ YEARS					
Between Year Means	2	4.40	2.20	4.68	.01—.05
Among Person Means	103	157.41	1.53	3.26	< .01
Residual	206	96.93	0.47		
Total		258.74			

* P Gives the probability with which differences equal to or exceeding those observed might arise through chance.

epidemiological field investigation of respiratory illness was based upon the periodic survey of families for the purpose of collection of illness records. All families in which there were one or more children attending grade school or high school in each of the two communities were included in the study. These families were visited every twenty-eight days during the three school years, September to June, 1946-1949. On each visit to the family, inquiry was made about acute respiratory illnesses which had occurred among their members during the past four weeks.

Acute respiratory illness presented in this report includes all reported illnesses except attacks of asthma, intestinal influenza or grippe, tonsillectomies, and mastoidectomies. Previous analyses have shown that the two communities were similar with respect to age distribution of the study population and median size of family. However, there was a definite difference between the two with respect to education and occupational class of the head of the household. For the purposes of this particular analysis it is believed that any differences between the two communities can be ignored. Therefore, the data presented represent the combined experience of both.

This is a study based upon 564 families, all of which were observed for illness in each of the three school years. A further restriction upon the data was imposed. Only families described as simple biological units are included. These units were composed of a husband, wife, and their children.² This results in a homogeneous group in which the risk of exposure within the family and of community exposure to respiratory disease may be considered to be held relatively constant. It is true that husbands, wives, and children may all have different opportunities for community exposure to respiratory illness. However, the families because of their constitution are generally similar in this respect.

STABILITY OF RESISTANCE TO RESPIRATORY ILLNESS

The study of either susceptibility or resistance to respiratory

² In thirty-six families there was only one parent present, that is, the parent was a widow or a widower.

illness requires data of a particular kind. Records of such illness must be collected with great care for the same persons over a period of time. Care is needed in the collection of these records to insure that any differences in number of illnesses in time are not due to some variation in the method of obtaining reports of such illness, or due to variations caused by unusual epidemics of respiratory disease. Consequently, very few studies of respiratory illness can meet the rigorous standards for critical study of host susceptibility or resistance.

Gafafer and Doull had data which met the requirements for study of resistance to the common cold (8). Their study included a number of groups. The ones cited here are one student group numbering 111 who reported their respiratory illnesses for three years and forty-five who reported for four years. Their conclusion concerning the study of the two stu-

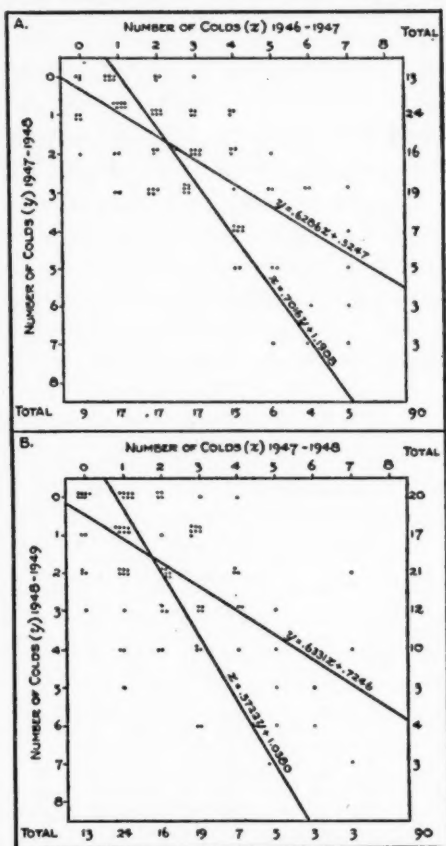
Table 3. Correlation coefficients for minor respiratory illnesses among persons of both sexes by single years of age and broad age groups for adults. Pleasantville and Mt. Kisco combined. School years September, 1946-May, 1947; September, 1947-May, 1948; September, 1948-May, 1949.

AGE AS OF FIRST YEAR	NUMBER OF PERSONS N	1ST VERSUS 2ND YEAR		2ND VERSUS 3RD YEAR		1ST VERSUS 3RD YEAR	
		Correlation Coefficient r	Standard Error SE	Correlation Coefficient r	Standard Error SE	Correlation Coefficient r	Standard Error SE
5 Years	79	.53	.081	.50	.085	.54	.080
6	90	.66	.059	.60	.067	.49	.081
7	80	.61	.071	.43	.092	.41	.094
8	104	.47	.077	.47	.077	.47	.076
9	70	.55	.084	.59	.079	.51	.090
10	75	.47	.091	.42	.096	.45	.092
11	80	.53	.081	.64	.066	.53	.081
12	70	.50	.091	.41	.099	.57	.081
13	77	.47	.089	.45	.092	.34	.102
14	75	.44	.090	.59	.076	.53	.083
15	93	.43	.085	.42	.086	.32	.094
16	33	.43	.145	.66	.099	.41	.146
17	38	.56	.113	.34	.145	.41	.137
18	26	.52	.146	.50	.149	.11	.198
19-29	87	.53	.077	.60	.069	.51	.077
30-34	164	.30	.071	.41	.065	.34	.069
35-39	291	.43	.048	.49	.045	.33	.052
40-44	281	.45	.048	.52	.043	.41	.050
45-49	179	.44	.060	.32	.067	.23	.071
50+	104	.48	.075	.39	.083	.42	.081

dent groups was "that stability of resistance or susceptibility to colds was not a characteristic of either population."

In the present analysis it is postulated that susceptibility to minor respiratory illness changes with age. To test this assumption it is necessary to study the illness experience over a period of years of persons in well-defined or narrow age classes until adult life is reached. Consequently, the data are presented for children by single years of age, starting at age 5 and up to age 18, and thereafter for adults by broad age groups. It seems reasonable to assume that children at specific ages have generally similar risks of exposure to respiratory illness in the community and that adults, whose environment is not so circumscribed as that of children, have among themselves similar opportunities of contact with respiratory illness.

Table 1 shows the mean number of respiratory illnesses per person in three successive years of observation for persons at specific ages. The data are arrayed according to age as of the first year. For example, the mean number of illnesses for those



who were age 5 in the first year was 3.08 per person; in the second year when they were age 6 the mean was 2.64; and in the third year when they had reached age 7, the mean was 2.18.

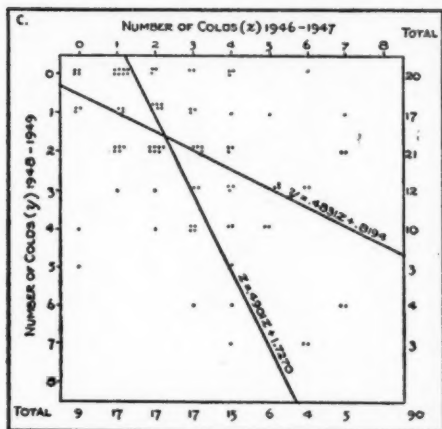


Fig. 2. A, B, and C. Scatter diagram showing the relationship between the number of respiratory illnesses observed in children aged 6 in successive school years: A, 1946-1947 and 1947-1948; B, 1947-1948 and 1948-1949; and C, with an interval of one year, 1946-1947 and 1948-1949.

During the late teen ages there was a fairly sharp decrease in the incidence of respiratory illness. After adult life was reached the mean number of illnesses per person maintained a fairly constant level, about 1 to 1.2 per person; after age 40 there was a slight decline in the mean number of illnesses.

A point of considerable interest brought out by Figure 1 is that the period of adolescence, a period of physiological change or stress, shows an increase in susceptibility to respiratory illness. This may be interpreted to mean that susceptibility to infection is not determined solely by familiarity of the host with infecting organisms in the environment which results in an increase in resistance, or natural immunity. Change in the internal environment of the host is also a factor of importance.

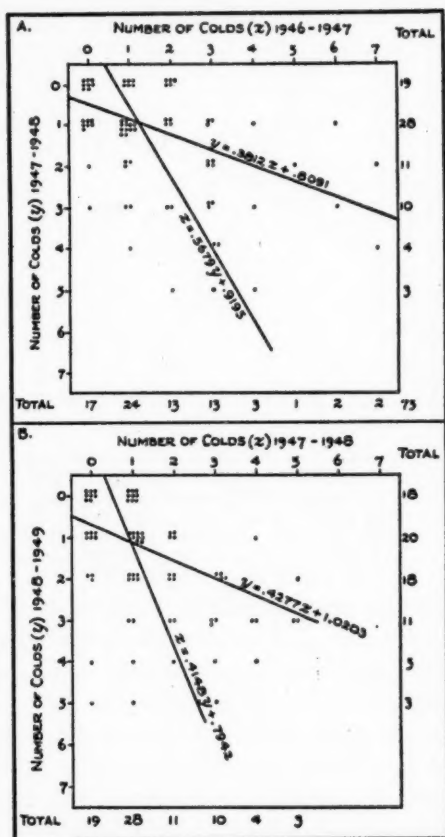
The decline in incidence of respiratory illness with age is due

The decline in incidence of respiratory illness with age can be seen most clearly in Figure 1 which shows the mean number of attacks per person at specific ages in each of the three successive school years. After age 5 there was a rapid decline in the mean incidence per person until age 12. During the adolescent ages there was an increase, though somewhat irregular, in the mean number of illnesses per person.

no doubt to a decline in susceptibility to such illness as age increases. It is a striking fact that the decline is most rapid during the period of deceleration of growth; at the adolescent ages it is halted and the incidence shows some increase during this period of acceleration of growth. When full maturity is reached the incidence tends to maintain a level with no marked fluctuations.

Figure 1 also illustrates the fact that there was essentially no real difference between the years studied, that is, no evidence of unusual epidemics of respiratory illness in one year as compared with another. Therefore, the data are entirely suitable for comparison of a person's experience of respiratory illness in the three successive years.

A comparison of a person's experience in the three successive years may be examined by application of the method of analysis of variance to the data. Table 2 shows these data. Here again the data are arrayed according to single years of age at first observation, from age 5 to age 18 and by broad age groups thereafter. It is noteworthy that up to age 9 there is a signifi-



cant variation between years and after that age, with a few exceptions, the variation between years is not significant until age 45 is reached. This again is evidence that young children

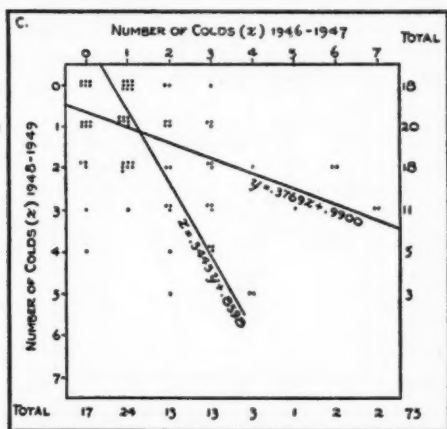


Fig. 3, A, B, and C. Scatter diagram showing the relationship between the number of respiratory illnesses observed in children aged 10 in successive school years: A, 1946-1947 and 1947-1948; B, 1947-1948 and 1948-1949; and C, with an interval of one year, 1946-1947 and 1948-1949.

of school age are changing their illness pattern. They are in the process of developing resistance to respiratory illness or are adjusting to their environment in that respect.

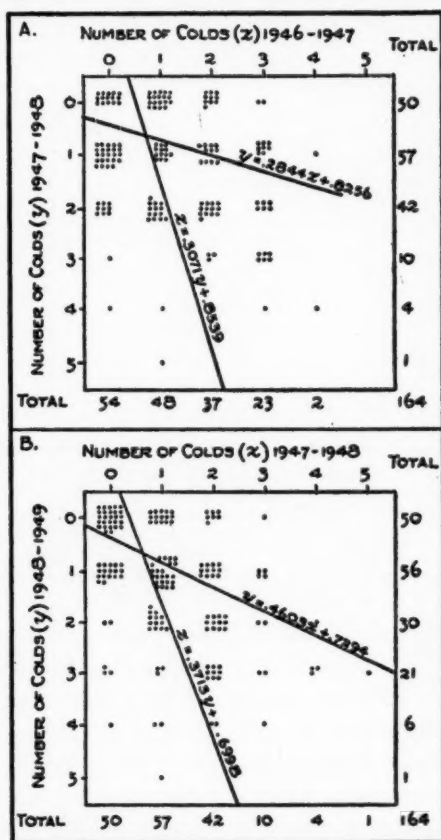
In each age group there is a significant ratio of variance for the individual mean attack rate for the three-year period. In other words, certain persons remain susceptible and tend to fall into the same ill-

ness class over a period such as three years.

A comparison of the illness experience of the same persons at different periods of time may also be made by use of the coefficient of correlation, the Pearsonian product moment r . Table 3 shows the computed correlation coefficients for the experience in pairs of years; the first year versus the second; the second versus the third; and the first versus the third year. Except for persons aged 18, in each period of time the coefficient of correlation is highly significant. There was a definite tendency for persons to remain in the same sickness class, that is, to remain high or low, over a period of time, such as three years. However, in general, the positive association was less marked between the first and the third years than between the pairs of successive years.

Figures 2, 3, and 4 show scatter diagrams with regression lines for persons at three different ages: children aged 6, children aged 10, and adults aged 30-34. The coefficient of correlation was highest for those aged 6, somewhat lower for children aged 10, and lowest for adults aged 30-34.

It seems reasonable to conclude from these data that stability of resistance or change in susceptibility to respiratory illness is different for young children compared with adults. During the early school ages, resistance to respiratory illness is in the process of being established. When adult life is reached there is a tendency for persons who suffer frequent attacks of respiratory illness to remain over a period of time in that class.



Acknowledgments are made to Dr. Mildred Wells and to the Westchester County Department of Health for generous assistance and cooperation which greatly facilitated the study of acute respiratory illness.

An especial acknowledgment is made to the families in Pleasantville and Mt. Kisco who participated in the study.

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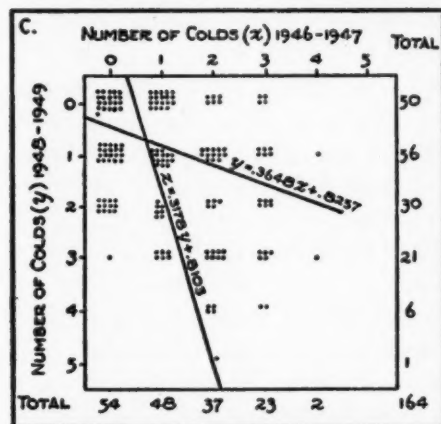


Fig. 4, A, B, and C. Scatter diagram showing the relationship between the number of respiratory illnesses observed in adults aged 30-34 in successive school years: A, 1946-1947 and 1947-1948; B, 1947-1948 and 1948-1949; and C, with an interval of one year, 1946-1947 and 1948-1949.

INCIDENCE OF PNEUMONIA IN TWO COMMUNITIES IN NEW YORK STATE

DORIS TUCHER¹

PNEUMONIA has always been one of the most serious of the acute infectious diseases. Before the discovery of the antibiotics, for example, the period from 1930-1935, mortality from pneumonia in the United States was approximately 70-80 per 100,000 population. Since the discovery of the antibiotics and their use in the treatment of pneumonia, the severity of the illness has been modified greatly. The mortality has decreased within the last decade; data for 1948 show a mortality rate of 35 per 100,000 population (1, 2).

Certain facts about pneumonia have been established by observations of practicing physicians and by field-method studies. It affects most heavily those at the two extremes of the age span, namely, young children and older adults; it has a seasonal incidence with a peak during late winter and early spring.

Although pneumonia does not cause as many deaths as in the past, there is no indication that the incidence of the disease in the general population has decreased. Statistics on incidence of pneumonia in the general population are not available because it is not one of the "reportable diseases." Observation over a period of time of a population to note the occurrence of illness is one way of obtaining data on the incidence of pneumonia.

Three studies which included reporting of cases of pneumonia are the Hagerstown Study (1921-1924), the study made by the Committee on the Costs of Medical Care (1928-1931), and the study in the Eastern Health District of Baltimore (1938-1943). These studies showed annual rates of 8.7, 8.2, and 8.0 per 1,000 population, respectively (3, 4, 5).

A study of acute respiratory illness in two communities,

¹ From the Milbank Memorial Fund. This is the seventh in a series of papers dealing with a study of respiratory illness.

Pleasantville and Mt. Kisco in Westchester County, New York, was conducted by the Milbank Memorial Fund in cooperation with the Westchester County Department of Health during the three school years, September to June, 1946-1949. Periodic visits were made to certain families for the collection of illness records. This paper presents the data on pneumonia cases which were reported in the two communities.

DATA AND METHOD OF STUDY

The two communities, Pleasantville and Mt. Kisco, were fairly comparable with respect to size. According to the 1940 Census, there were 4,454 persons living in the incorporated village of Pleasantville and 5,941 in the village of Mt. Kisco. Sixteen per cent of the population of Pleasantville were foreign born compared with 21 per cent in Mt. Kisco. In both communities the foreign born were chiefly Italian. Negroes formed a very small proportion of the population in either place; about 1 per cent in Pleasantville and 3 per cent in Mt. Kisco.

All families in which there were one or more children attending grade school or high school in each of the two communities were included in the study. These families were visited every twenty-eight days during the three school years, September to June, 1946-1949. On each visit to the family, inquiry was made about acute respiratory illnesses which had occurred among their members during the past four weeks.

The sickness record included the nature of the illness as stated by the informant, usually the mother, date of onset and duration of illness, the onset and duration of disability and the number of days in bed, the amount of medical care, and, if hospitalized, the number of days in the hospital.

The mean number of families visited during the three school years of the special study was 530 in Pleasantville and 570 in Mt. Kisco. The families in Pleasantville included some 2,100 persons and those in Mt. Kisco 2,400. In each group of families there were about 900 school-age children and 180 to 200 pre-school-age children.

CHARACTERISTICS OF THE TWO COMMUNITIES

In the study of acute respiratory illness, data were obtained from each family which reveal certain social characteristics of the family. The data included a census of the household, the age, sex, and marital status of the members, the occupation and place of employment of all employed members, and the highest education attained for all members of the household.

A description of the two communities with respect to these characteristics has been presented in previous reports (6, 7). The two communities were found to be comparable with respect to loss of families due to moving or refusal to cooperate, age distribution of the family members, age of husbands and wives, and size of family. There were, however, marked differences between the two communities in the educational attainment of the husbands and wives, and in the occupation of the head of the household. A higher proportion of the household heads in Pleasantville were in the professional and managerial class than was true of those in Mt. Kisco.

INCIDENCE OF PNEUMONIA

The illnesses reported upon in this study are pneumonia cases which occurred in households in Pleasantville and Mt. Kisco. Only households which were observed at least thirty weeks in one or more of the three school years September to June, 1946-1949 are included. A total of forty-eight cases were reported in Pleasantville and seventy-five in Mt. Kisco. Five cases were excluded for the following reasons: three cases, which were guests in the household, were excluded because the persons affected were nonresidents; two cases were excluded because they occurred in persons who received no medical care for the illness.

After these exclusions were made there remained a total of forty-five cases in forty-one households in Pleasantville and seventy-three cases in sixty households in Mt. Kisco. All of these illnesses had medical care. Of these, 29 per cent in Pleasantville and 41 per cent in Mt. Kisco were hospitalized.

Seasonal Incidence. Figure 1 shows the weekly incidence of

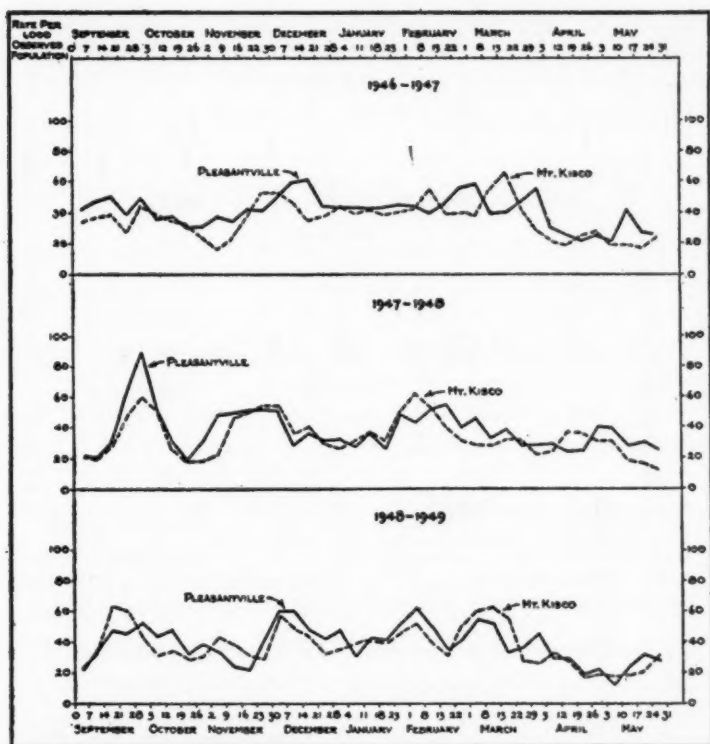


Fig. 1. Weekly incidence of acute respiratory illness in Pleasantville and Mt. Kisco, September to May, 1946-1947, 1947-1948, and 1948-1949.

acute minor respiratory illness for all ages in Pleasantville and Mt. Kisco for the three school years, September to June, 1946-1949. The solid line indicates data for Pleasantville and the broken line indicates data for Mt. Kisco. This chart shows the remarkable similarity in seasonal incidence between the two communities in each year. The data indicate that there are four periods of high incidence, namely, September, November, January and February, and April or May.

Figure 2 shows the number of pneumonia cases by week of onset in each school year for Pleasantville and Mt. Kisco. The data for Pleasantville are shown by the solid bar and for Mt.

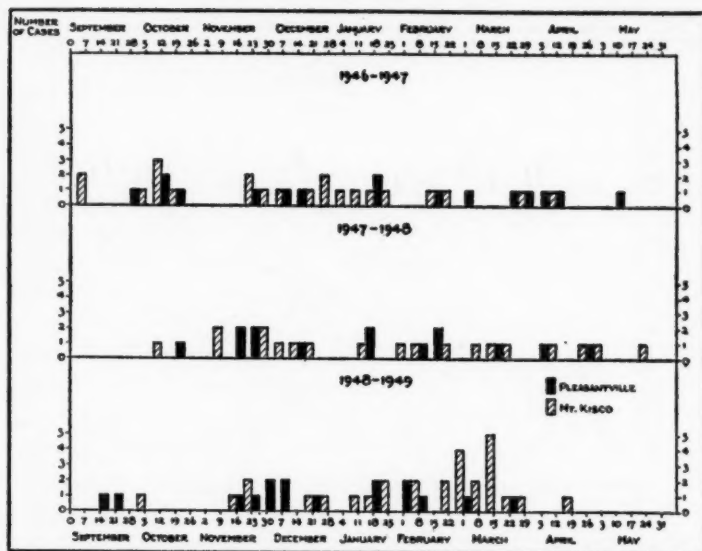


Fig. 2. Number of cases of pneumonia by week of onset in Pleasantville and Mt. Kisco, September to May, 1946-1947, 1947-1948, and 1948-1949.

Kisco by the cross-hatched bar. The interesting feature of this chart is the fact that pneumonia occurred throughout the year and was not restricted to one particular season. This was true of all three study years. The period February through March in 1949 in Mt. Kisco is of interest because there was a greater concentration of pneumonia cases at that time than at any other period.

Table 1. Annual incidence of pneumonia by age in Pleasantville and Mt. Kisco. Data for the three school years, September, 1946 to May, 1949 are combined.

AGE GROUP	PLEASANTVILLE	Mt. KISCO
	Rate Per 1,000 Population	
ALL AGES	6.6	9.7
0-4	15.5	20.4
5-9	9.2	21.0
10-18	2.0	6.1
19-34	4.8	6.1
35-54	6.4	5.3
55+	9.7	15.5

In that period there were 15 cases in Mt. Kisco compared with 2 in Pleasantville.

Incidence by Age. The annual incidence of pneumonia by

age in Pleasantville and Mt. Kisco is shown in Table 1. The population is composed of persons counted in each year in which they were observed. The rate is a mean annual rate. Pleasantville had a rate for all ages of 6.6 per 1,000 population and Mt. Kisco a rate of 9.7.

The highest incidence in both communities was in the younger age group, those 9 years and younger. In Pleasantville, the group aged 0-4 had more pneumonia than any other age group. The rate for this group was 15.5 per 1,000 population. Those aged 55 and over had the next highest rate, 9.7. In Mt. Kisco, the groups aged 0-4 and 5-9 had similar rates, 20.4 per 1,000 population for children aged 0-4 and 21.0 for children aged 5-9. The rate for those aged 55 and over was the next highest. The rate for all ages in Mt. Kisco is significantly higher than that for Pleasantville.²

Figure 3 gives the incidence of pneumonia by age as noted in three studies, namely, the study in the Eastern Health District of Baltimore, the study made by the Committee on the Costs of Medical Care, and the study in the two communities being reported upon. The data for all three studies show a similar age variation in the incidence of pneumonia. All of them show the highest incidence in the younger age groups with a rapid decline until the adult ages are reached. After age 55+, all show a rise in the rates. It is interesting to note that Mt. Kisco had consistently higher rates of pneumonia than was noted in any of the other studies with the exception of the groups aged 0-4 and 35-54. Pleasantville, on the other hand, had the lowest rates for the age groups 0-4, 5-9, and 10-18.

Incidence by Occupational Class. In a previous report of the studies in Pleasantville and Mt. Kisco the relation of occupational class to the incidence of acute respiratory illness was con-

² The statistical test used in this study is that which derives a value "t" from the ratio of the difference between the two rates to be tested to the standard error of the difference between the rates. The standard error of the difference between rates σd is derived from the following formula:

$$\sigma d = \sqrt{P Q \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}$$

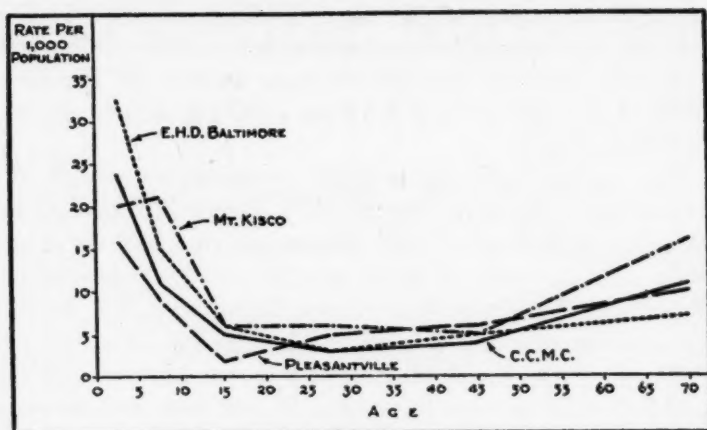


Fig. 3. Age-specific incidence of pneumonia in the population studied by the Committee on the Costs of Medical Care, 1928-1931, in the sample population of the Eastern Health District of Baltimore, 1938-1943, and in the sample populations in Pleasantville and Mt. Kisco, 1946-1949.

sidered (6, 7). The observed population in each community was classified according to the occupational class of the head of the household and delegated to one of three classes: (1) professional and managerial; (2) clerks, salesmen, and skilled workers; and (3) semi-skilled workers, unskilled, and domestics. The data showed that "the higher the occupational class, the higher was the incidence of acute respiratory illness."

Table 2 gives the incidence of pneumonia cases by occupational class in the two communities combined for the three

Table 2. Annual incidence of pneumonia by occupational class of the head of the household. Data for the three school years, September, 1946 to May, 1949 and for both communities are combined.

OCCUPATIONAL CLASS	RATE PER 1,000 POPULATION	NUMBER OF CASES ¹	POPULATION
Professional and Managerial	9.0	52	5,808
Clerical and Skilled Workers	8.7	35	4,036
Semiskilled and Unskilled Workers	7.5	27	3,594

¹Three cases which occurred in boarders were excluded. One case in a member of a household in which there was no employed member was also excluded.

school years. The incidence of pneumonia for each of the three occupational classes is fairly similar. Since pneumonia has a relatively low frequency of occurrence, the experience of the two communities was combined.

PNEUMONIA AS IT OCCURS IN HOUSEHOLDS

It has been known for some time that healthy persons harbor pneumococci (8). Because pneumonia appears in a population in isolated instances with no known source of infection, it was believed that such cases arose spontaneously when the pneumococci which a person normally harbored reached a specific virulence in relation to the person's susceptibility. In one article, Smillie contradicted this theory (9). He concluded that "the patient with pneumonia does not, as a rule, infect the family with his specific strain. On the contrary, the family infects the patient."

Smillie's investigations indicate that the household is an important unit for study of the epidemiology of pneumonia. It is possible to describe the pneumonia households in Pleasantville and Mt. Kisco with respect to (1) the position of the case in the household; (2) the tendency for households to be repeaters in various school years; (3) the occurrence of multiple cases in the household; and (4) the illness record of the pneumonia household and of the persons who suffered an attack of the disease.

The distribution of pneumonia cases according to the position of the patient in the household is shown in Table 3. In both communities cases among children formed the highest proportion of the total, namely, from 51 to 64 per cent. Cases among mothers and fathers formed the next highest proportions of the total. The one case in Pleasantville in a domestic was in a servant who lived in the home. There were three cases of pneumonia in boarders, one in Pleasantville and two in Mt. Kisco. The households in which these three cases occurred are excluded from all further analysis because it was believed that contact with the family was less intimate than that among family members.

RELATIONSHIP IN HOUSEHOLD	PER CENT		NUMBER	
	Pleasantville	Mt. Kisco	Pleasantville	Mt. Kisco
TOTAL	100.0	100.0	45	73
Father	11.1	8.2	5	6
Mother	24.5	17.8	11	13
Preschool Child	20.0	16.5	9	12
School Child	26.7	45.2	12	33
Adult Child	4.4	2.7	2	2
Grandparent	6.7	6.9	3	5
Other Relatives	2.2	0.0	1	0
Boarder	2.2	2.7	1	2
Servant	2.2	0.0	1	0

Table 3. Distribution of pneumonia cases according to their position in the household in Pleasantville and Mt. Kisco. Data for the three school years, September, 1946 to May, 1949 are combined.

During the three school years a total of 1,401 households were observed in Pleasantville. This number is obtained by counting each household in each year in which it was observed. Forty-three, or 3 per 100, of these households had one or more pneumonia cases in them during their observation. It should be pointed out that a household which had a case in it in one year could also appear as a pneumonia household in other years. Therefore, the rate, 3 per 100, represents the annual risk of becoming a pneumonia household. The annual rate for Mt. Kisco was slightly higher, 4 per 100, that is, there were sixty-eight out of 1,544 households.

The data concerning households indicate that there are certain households which appear to be especially susceptible to attacks of pneumonia. Table 4 shows the pneumonia households arrayed according to the number of cases

Table 4. Distribution of households according to number of pneumonia cases in them during three school years, September to June, 1946-1949 in Pleasantville and Mt. Kisco.

NUMBER OF CASES	PLEASANTVILLE	MT. KISCO
	Number of Households	
TOTAL	40	58
1 Case	37	48
2 Cases	2	8
3 Cases	1	1
4 Cases	0	1

which occurred in them during the three school years of the study. In Pleasantville, three households, or 7 per cent of the total, contributed 16 per cent of the total pneumonia cases. In Mt. Kisco, 17 per cent of the pneumonia households contributed 32 per cent of the total cases in that community. These data are not influenced by spread within the household. Those with multiple cases are counted only once in this particular analysis.

In Pleasantville there was only one instance of what appeared to be a spread of infection in the household unit, that is, one or more persons who had pneumonia within two to fifteen days subsequent to the first case in the household. In Mt. Kisco there were only two such instances.

In one of the investigations made by Smillie, it was noted that during the period that a pneumonia case was present in the family, one or more other family members may develop some form of respiratory illness, and some may even develop pneumonia (9).

The studies of respiratory disease in Pleasantville and Mt. Kisco were based on monthly reports of illness given to the family visitor by a responsible household member. Laboratory tests to detect any type of infection in the family were not made. Therefore, there was no attempt to establish the presence of a healthy carrier of any type of respiratory illness. It is possible, however, to study the household in order to see how much overt illness of an acute respiratory nature was present in household members immediately preceding and subsequent to an attack of pneumonia in one of its members. For purposes of comparison, a group of control households was selected from the non-pneumonia families in order to compare their illness experience with that of the pneumonia families.

The procedure of selecting control families was as follows: The pneumonia households were arrayed according to age and relationship of persons in the household, occupational class of the head of the household, and the month and year of onset of the index case, a case of pneumonia. Control households

were chosen which most closely matched the pneumonia households as to these characteristics. One member of the control family, the index case, had to have had an attack of acute respiratory illness within fifteen days prior or subsequently to the time of the onset of the pneumonia case in the household to which it was matched. The index case in the control household was either the case with the most severe symptoms if there were more than one case with onset in the time period, or it may have been the only case of acute respiratory illness which occurred in the household within the specified time period, fifteen days prior or fifteen days subsequent to the onset of the matched pneumonia case. Because of the strictness of the matching qualifications, it was found that it was impossible to find control households for pneumonia households with six or more members. Consequently, this part of the study was confined to households not larger than five persons.

In Pleasantville a total of twenty-four pneumonia households with ninety-nine persons in them was matched with forty-six control households containing 190 persons. In Mt. Kisco, thirty-eight pneumonia households with 153 persons were matched with seventy-one control households containing 275 persons. Whenever possible two control households were matched with one pneumonia household.

Table 5. Rate of illness in persons in households within a period of ten days prior to and a period of ten days subsequent to an index case in pneumonia and in control households in Pleasantville and Mt. Kisco. Data for the three school years, September, 1946 to May, 1949 are combined.¹

COMMUNITY	RATE PER 100 PERSON DAYS		NUMBER OF ILLNESSES		PERSON DAYS AT RISK	
	Pneumonia Households	Control Households	Pneumonia Households	Control Households	Pneumonia Households	Control Households
Pleasantville	1.4	0.8	20	23	1,381	2,776
Mt. Kisco	1.7	0.7	33	29	1,989	3,978

¹ Index cases were excluded from both groups of families.

In both groups of households, pneumonia and control, a count of illnesses which occurred in their populations was made for the period of ten days prior to and subsequent to the day of onset of the index case. Rates were computed on the total person-days at risk of such illness. A person was considered at risk until he developed an acute respiratory illness; then he was withdrawn from the population.

Table 5 shows the incidence of acute respiratory illness in the population of the pneumonia and control households in Pleasantville and Mt. Kisco. Index cases are excluded. In both communities the pneumonia households had a higher rate of illness at the time of the attack of pneumonia than did the control households. In Pleasantville the illness rate in the population of the pneumonia families was 75 per cent above that in the control families. In Mt. Kisco the pneumonia families had a rate twice as high as was noted for the control families. When the differences between the illness rates in the families selected because of a case of pneumonia and those selected as controls were tested, it was found that the probability of a difference such as was found in Pleasantville might be expected to occur seven times out of one hundred chances. The probability of such a difference occurring by chance in Mt. Kisco was calculated at less than once in a hundred.^{2,3}

There is a known predisposition for persons once attacked by pneumonia to have subsequent attacks. Are these persons who were attacked by pneumonia during the period of the special study also more prone to suffer other acute respiratory infections than was true of the general population? This may be learned by a comparison of their illnesses.

The total respiratory illness experience for the three years is available for persons who had an attack of pneumonia during that time. Table 6 shows in Column 1 the number of illnesses experienced by these persons at specific ages. The expected number, based upon the experience of the total population, is

³ The test was applied on the assumption that no one person in either population was apt to be attacked by acute respiratory illness more than once within the specified twenty-one-day period.

AGE GROUP	PLEASANTVILLE			MT. KISCO		
	Actual Number	Expected Number	Ratio of Actual to Expected	Actual Number	Expected Number	Ratio of Actual to Expected
ALL AGES	264	171.07	1.54	397	293.72	1.35
0-4	66	42.23	1.56	92	73.18	1.26
5-9	92	59.13	1.56	135	120.74	1.12
10-18	26	15.99	1.63	62	39.34	1.58
19+	80	53.72	1.49	108	60.46	1.79

Table 6. Ratio of the actual number of acute respiratory illnesses to the expected number of illnesses among 118 persons who had pneumonia in the three school years, September, 1946 to May, 1949 in Pleasantville and Mt. Kisco.¹

¹ A person was counted for each of the three years that he was observed. His illness experience for these years is combined.

shown in Column 2. The ratio of the observed number of illnesses to the expected is shown in Column 3. In both communities in each age group the observed number of illnesses exceeds the expected number. The consistency of this pattern is most striking. It may be concluded that persons who had pneumonia do constitute a group who are susceptible to acute respiratory illness as judged by a comparison of their illness experience with that of the general population.

SUMMARY

This paper presents data on pneumonia cases which were reported in two communities, Pleasantville and Mt. Kisco in the three school years, September to June, 1946-1949. The findings of this study may be summarized briefly as follows:

1. Cases of pneumonia occurred throughout the year and were not restricted to one particular season.
2. The highest incidence in both communities was in children aged 9 years and younger. Adults aged 55 years and older had the next highest incidence.
3. The incidence of pneumonia in the three occupational classes: professional and managerial; clerks, salesmen, and skilled workers; and semi-skilled workers, unskilled, and domestics was fairly similar.

4. It was concluded that the household is an important unit for the study of the epidemiology of pneumonia. The following observations were made:

5. The annual risk of becoming a pneumonia household, that is, of any household member acquiring pneumonia, was 3 per 100 households in Pleasantville and 4 per 100 in Mt. Kisco.

6. Pneumonia cases were more frequent in certain families than in others. In Pleasantville three households, or 7 per cent of the total, contributed 16 per cent of the total pneumonia cases. In Mt. Kisco 17 per cent of the pneumonia households contributed 32 per cent of the total cases.

7. The incidence of acute respiratory illness in the populations of pneumonia and control families was shown for the period of ten days prior to and ten days subsequent to the pneumonia case. In both communities persons in the pneumonia households had a higher rate of illness at the time of the attack of pneumonia than did those in the control families.

8. The total respiratory illness experience for three years for persons who had an attack of pneumonia during that time was shown by age. The expected number of illnesses, based upon the experience of the total population was also shown for these persons. When the observed and expected number of illnesses were compared, those people who had pneumonia constituted a group who were most susceptible to acute respiratory illness.

Acknowledgments are made to Dr. Mildred W. Wells and to the Westchester County Department of Health for generous assistance and cooperation which greatly facilitated the study of acute respiratory illness.

An especial acknowledgment is made to the families in Pleasantville and Mt. Kisco who participated in the study.

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Appendix Table 1. Number of cases of pneumonia by age in Pleasantville and Mt. Kisco. Data for the three school years, September, 1946 to May, 1949, are combined.

AGE GROUP	PLEASANTVILLE	Mt. KISCO
ALL AGES	45	173
0- 4	9	13
5- 9	9	22
10-18	3	11
19-34	5	8
35-54	14	12
55+	5	7

Appendix Table 2. Population by age in Pleasantville and Mt. Kisco. Data for the three school years, September, 1946 to May, 1949 are combined.

AGE GROUP	PLEASANTVILLE	Mt. KISCO
ALL AGES	6,869	7,552
0- 4	581	638
5- 9	975	1,047
10-18	1,537	1,808
19-34	1,039	1,313
35-54	2,177	2,282
55+	515	453
Unknown Age	45	11

SOCIAL AND PSYCHOLOGICAL FACTORS AFFECTING FERTILITY

XVII. THE INTERRELATION OF FERTILITY, FERTILITY PLANNING, AND FEELING OF PERSONAL INADEQUACY¹

CHARLES F. WESTOFF AND CLYDE V. KISER

GENERAL feelings of psychological insecurity which supposedly characterize modern competitive urban society have been suggested as factors at least partially operative in the downward trend of the birth rate. Exactly what role they play varies with the theorist. Corrado Gini, at one extreme, was firmly convinced that man's fecundity was being reduced by the psycho-physical consequences of the competitive struggle. Modern gynecologists are pointing with increasing frequency to psychosomatic conditions as possible causes of sterility. Sociologists and psychologists, on the other hand, are more inclined to regard feeling of personal insecurity as a basic factor not in the impairment of fecundity but rather in a reduction of the motivation to have children.

Data on the relationship of these variables have been conspicuously absent. This has probably been due to both the subjective nature of "psychological insecurity" and to the lack of the interdisciplinary approach that such a study requires. To the authors' knowledge, the data collected in the Indianapolis Study and presented in this paper represent the first attempt at measuring the interrelationship of feeling of personal inadequacy, fertility-planning status, and fertility. Are feelings of inadequacy detrimental or conducive to effective contraceptive practice? Among the couples who do practice contraception regularly are feelings of inadequacy associated with

¹ This is the seventeenth of a series of reports on a study conducted by the Committee on Social and Psychological Factors Affecting Fertility, sponsored by the Milbank Memorial Fund with grants from the Carnegie Corporation of New York. The Committee consists of Lowell J. Reed, Chairman; Daniel Katz; E. Lowell Kelly; Clyde V. Kiser; Frank Lorimer; Frank W. Notestein; Frederick Osborn; S. A. Switzer; Warren S. Thompson; and P. K. Whelpton. The first-mentioned author wishes to thank the Committee for the fellowship which facilitated the preparation of this paper.

high or low fertility? What are the socio-psychological correlates of psychological insecurity? These are the main questions raised in this analysis. The particular hypothesis under consideration is: "The stronger the feeling of personal inadequacy, the higher the proportion of couples practicing contraception effectively and the smaller the planned families."

THE DATA

The general demographic criteria and the sampling plan of the Indianapolis Study have been described in previous articles.² Briefly, the 1,444 couples in the "inflated" sample met the following eligibility requirements for inclusion in the Study: husband and wife native white, both Protestant, both at least eighth grade graduates, married during 1927-1929, neither previously married, husband under 40 and wife under 30 at marriage, and both residents of a large city most of the time since marriage. Furthermore, the 1,444 couples are those classified as "relatively fecund."³

The fertility-planning categories, which were constructed from detailed pregnancy and contraceptive histories, including data on termination of pregnancies and attitudes toward each pregnancy, have also been described in earlier reports.⁴ In descending order of success in fertility planning, there are four

² For a complete description of the eligibility requirements and their rationale see Whelpton, P. K. and Kiser, Clyde V.: *Social and Psychological Factors Affecting Fertility*. iv. Developing the Schedules, and Choosing the Type of Couples and the Area to be Studied. *The Milbank Memorial Fund Quarterly*, October, 1945, xxiii, No. 4, pp. 386-409 (Reprint pp. 139-162).

A detailed account of the sampling procedure may be found in Whelpton, P. K. and Kiser, Clyde V.: *Social and Psychological Factors Affecting Fertility*. v. The Sampling Plan, Selection, and Representativeness of Couples in the Inflated Sample. *The Milbank Memorial Fund Quarterly*, January, 1946, xxiv, No. 1, pp. 49-93 (Reprint pp. 163-207).

³ All couples reporting four or more live births were classified as "relatively fecund" regardless of other circumstances. Couples with three or fewer live births were also classified as "relatively fecund" unless they knew or had good reason for believing that conception was physiologically impossible during a period of at least 24 or 36 consecutive months since marriage (24 if never pregnant, 36 if ever pregnant). Failure to conceive in the absence of contraception practiced "always" or "usually" during periods of the above durations was considered "good reason" for such belief.

⁴ See Whelpton, P. K. and Kiser, Clyde V.: *Social and Psychological Factors Affecting Fertility*. VI. The Planning of Fertility. *The Milbank Memorial Fund Quarterly*, January, 1947, xxv, No. 1, pp. 63-111 (Reprint pp. 209-257).

classifications: Number and Spacing Planned, Number Planned, Quasi-Planned, and Excess Fertility.⁵ The measure of fertility employed throughout this analysis represents the number of live births per 100 couples. This rate is not standardized for age because of the high degree of homogeneity of the couples with respect to duration of marriage.

The data collected to measure "feeling of personal inadequacy" constitute a series of thirty-five questions of the multiple-choice variety. In addition, there is the interviewer's rating of each spouse on a scale of Personal Inadequacy. This rating was based on the interviewer's over-all, subjective impression of the respondent after the interview was completed. These thirty-five questions, along with a supplementary list of forty-two other questions (reduced to sixteen core items in the validity check, that is, not repeating the same question to or about the spouse) were subjected to tests of validity and item analysis. The validity test consisted in an item evaluation by a group of psychiatrists and the item analysis involved various statistical checks on the internal consistency of the items. The mechanical details of these and other tests and the original and supplementary lists of questions that were used are presented in the Appendix. The net effect of these refinements was to limit the final number of questions to twenty-

⁵ The four categories may be summarized as follows:

Number and Spacing Planned. The 403 couples in this group exhibit the most complete planning of fertility in that they had no pregnancies that were not deliberately planned by stopping contraception in order to conceive. The group consists of two major subdivisions: (a) 121 couples practicing contraception regularly and continuously and having no pregnancy, and (b) 282 couples whose every pregnancy was deliberately planned by interrupting contraception in order to conceive.

Number Planned. This group of 205 couples consists mainly of those whose last pregnancy was deliberately planned by stopping contraception in order to conceive but who had one or more previous pregnancies under other circumstances. Because of this, the couples are regarded as having planned the number but not the spacing of their pregnancies.

Quasi-Planned. This group includes 454 couples who did not deliberately plan the last pregnancy in the manner described above but who either wanted the last pregnancy or wanted another pregnancy.

Excess Fertility. This group is composed of 382 couples classified as least successful in planning size of family because they neither wanted the last pregnancy nor another."

Kiser, Clyde V. and Whelpton, P. K.: *Social and Psychological Factors Affecting Fertility*. ix. Fertility Planning and Fertility Rates by Socio-Economic Status. The Milbank Memorial Fund *Quarterly*, April, 1949, xxvii, No. 2, p. 211 (Reprint p. 382).

eight: fourteen of or about the wife, and fourteen of or about the husband. From the responses of these two sets of items, indices of feeling of personal adequacy were then constructed for the wife and husband separately and a joint classification was derived for the couple.⁶

DISTRIBUTION BY THE SUMMARY INDICES OF PERSONAL ADEQUACY

It is evident from the distributions in Table 1 that a significantly greater proportion of husbands than wives score high

INDEX OF PERSONAL ADEQUACY	NUMBER		PERCENTAGE	
	Wives	Husbands	Wives	Husbands
TOTAL	1,444	1,444	100.0	100.0
100 and Over (High)	33	76	2.3	5.3
90-99	138	226	9.5	15.6
80-89	273	355	18.9	24.6
70-79	375	399	26.0	27.6
60-69	417	297	28.9	20.6
50-59	138	65	9.5	4.5
Under 50 (Low)	70	26	4.9	1.8

Table 1. Numerical and percentage distributions of wives and husbands on the summary indices of personal adequacy.

⁶ Only the core items of the twenty-eight questions used in the construction of the summary indices of personal adequacy are presented below. The first number in the parenthesis represents the number of times the question was used in the index. There are four possibilities: asked of the wife about herself; asked of the wife about her husband; asked of the husband about himself; and of the husband about his wife. The second number in the parenthesis indicates the number of alternative responses provided in the questionnaire.

How often is it difficult for you to make up your mind about the things that have to be done day by day? (1:5)

Do you get upset easily? (4:5)

How much confidence do you have in yourself? (4:7)

Aside from financial matters, how good a job do you think you and your husband (wife) could do in bringing up several children? (2:5)

How much are you inclined to worry? (4:7)

Are you a good manager? (1:7)

On the whole, how good a chance do you have to express yourself and show what you are worth either in your homemaking (work) or in your outside (other) interests? (2:5)

How often has everything seemed to go wrong without any reason at all? (2:5)

How much energy and pep do you ordinarily have? (4:7)

Do you usually feel cheerful and look on the bright side of things? (2:7)

Interviewer's Rating on a Personal Inadequacy scale. (2:5)

on the personal adequacy scale. Over 45 per cent of the husbands are represented above the mean category (70-79) while only around 30 per cent of the wives are so represented. This is consistent with the findings on sex differences in most psychological tests, particularly the so-called personality inventories. The mean score is 78.7 for the husbands and 73.2 for the wives. The hypothetical range of the scores is from 14 to 124 and the actual range extends from 30 to 114 for wives and from 36 to 119 for husbands. The correlation between the scores of wives and the scores of husbands is +.39, as measured by the Pearsonian coefficient of correlation.

SOCIOLOGICAL CORRELATES

Before proceeding to the analysis of the interrelation of feeling of personal adequacy with fertility-planning and fertility, it may be well to review certain other relationships. Previous investigations have revealed various types of relationships between fertility, contraceptive practice, and such variables as occupation, net worth, shelter rent, education, and socio-economic status in general. A definite positive association between these variables and fertility-planning status was discovered by Kiser and Whelpton; the higher the occupation, net worth, education, etc., the higher the proportion of couples practicing contraception effectively.⁷ More significantly, it was also ascertained that within the topmost fertility-planning group, the "number and spacing planned" category, a direct relation was manifested between fertility and socio-economic status. In other words, as status with respect to occupation, education, and the other above-mentioned variables increases, the fertility of these families also increases. The degree of consistency of this relationship fluctuates but the trend is clearly apparent.

Feeling of economic insecurity is another variable whose theoretical connection to psychological insecurity seems obvious. How obvious is it? Is socio-economic status the sole

⁷ Kiser and Whelpton, *op. cit.*, ix. Fertility Planning and Fertility Rates by Socio-Economic Status. Pp. 217-221. (Reprint pp. 388-391).

determinant of adequacy feelings? Or are feelings of personal adequacy more dependent upon the subjective evaluations of economic position—feelings of economic security? Or is feeling of adequacy independent of both these dimensions? The relationship of economic security to fertility and fertility-planning was the subject of a recent publication in this series, wherein it was found that both success in fertility-planning and the size of the “number and spacing planned” families are directly associated with feeling of economic security.⁸

In view of these findings and in consideration of the paramount analytical importance of these variables, it is pertinent to ascertain the nature and degree of the relation of several socio-economic variables to feeling of personal adequacy.

Occupation. The data on occupation are available in the Indianapolis Study in the conventional census classifications and refer here to the husband's longest occupation since marriage. As indicated in Tables 2 and 3, the pattern of association between occupational status and feeling of personal adequacy is a direct one. The higher the occupational status, the higher are the proportions of husbands and wives expressing feelings of psychological security. There are some irregularities, such as those shown by the proprietary and clerical classes, but the general relation is definite.

Net Worth. The meaning of this term is the same as its usage in the business and financial world. It is the sum of cash savings, market values of equities in real property, investments, business enterprises, and insurance policies, minus debts outstanding.⁹ The direct relationship between net worth and feeling of adequacy is not consistent but again it is fairly well established (Tables 2-3). In the “\$10,000 and Over” category, about 69 per cent of the husbands represented are above the

⁸ Kiser, Clyde V. and Whelpton, P. K.: *Social and Psychological Factors Affecting Fertility*. xi. The Interrelation of Fertility, Fertility Planning, and Feeling of Economic Security. *The Milbank Memorial Fund Quarterly*, January, 1951, xxix, No. 1, pp. 53-62, 76-83 (Reprint pp. 479-488, 502-509).

⁹ Kiser and Whelpton, *op. cit.*, ix. P. 212 (Reprint p. 383). Net worth was not asked as a single question but was computed on the basis of component data collected specifically for the purpose.

MEASURE OF SOCIO-ECONOMIC STATUS	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY THE RATING OF THE WIFE ON THE SUMMARY INDEX OF PERSONAL ADEQUACY					
		Total	90 and Over	80-89	70-79	60-69	Under 60
ALL WIVES	1,444	100	11.8	18.9	26.0	28.9	14.4
<i>Occupation of Husband</i>							
Professional	153	100	18.9	13.1	24.2	28.1	15.7
Proprietary	189	100	23.8	22.8	24.3	16.9	12.2
Clerical	358	100	9.8	22.9	27.1	27.4	12.8
Skilled	298	100	9.7	20.8	29.5	29.9	10.1
Semiskilled	375	100	5.9	16.5	24.8	35.2	17.6
Unskilled	29	100	3.5	10.3	17.3	31.0	37.9
<i>Net Worth of Couple</i>							
\$10,000 and Over	97	100	19.6	23.7	36.1	12.3	8.2
6,000-9,999	109	100	19.3	25.7	20.2	30.3	4.6
4,000-5,999	114	100	20.1	21.1	28.1	22.8	7.9
2,000-3,999	281	100	8.9	22.0	29.9	26.0	13.2
1,000-1,999	203	100	10.3	24.1	16.3	34.5	14.8
200- 999	307	100	10.4	17.6	26.4	30.3	15.3
0- 200	237	100	9.3	12.7	24.5	32.9	20.7
Net Indebtedness	94	100	7.4	3.2	32.0	34.0	23.4
<i>Shelter Rent at Interview</i>							
\$60 and Over	156	100	17.9	28.2	16.7	27.6	9.6
50-59	110	100	17.3	27.3	25.5	19.1	10.9
35-49	367	100	12.8	21.0	32.4	21.3	12.5
25-34	389	100	11.6	15.4	27.2	31.1	14.7
15-24	328	100	8.2	14.9	24.1	36.9	15.9
Under 15	90	100	5.6	12.2	18.9	34.4	28.9
<i>Education of Wife</i>							
College 4+	86	100	23.3	27.9	23.3	20.9	4.6
College 2-3	80	100	16.2	31.3	17.5	26.3	8.8
College 1	73	100	10.9	13.7	41.1	28.8	5.5
High School 4	489	100	10.8	20.9	28.4	23.9	15.9
High School 3	119	100	12.6	23.6	19.3	26.9	17.6
High School 2	231	100	10.7	14.3	28.6	33.8	12.6
High School 1	142	100	9.9	12.0	20.4	41.5	16.2
Grade School 8	218	100	9.2	15.1	24.8	31.7	19.3

Table 2. The relation of the wife's rating on the summary index of personal adequacy to the husband's occupation, net worth of the couple, monthly rent or rental value of the home, and education of the wife.

mean category on the adequacy scale as contrasted with 34 per cent in the "Net Indebtedness" class. With the wives, the corresponding figures are 43 per cent and 11 per cent, respectively. We noted above that the husbands are more concentrated at the "adequate" end of the scale.

Shelter Rent. This term refers to the monthly shelter rent or rental value of the home at the time of interview (1941).

MEASURE OF SOCIO-ECONOMIC STATUS	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY THE RATING OF THE HUSBAND ON THE SUMMARY INDEX OF PERSONAL ADEQUACY					
		Total	90 and Over	80-89	70-79	60-69	Under 60
ALL HUSBANDS	1,444	100	20.9	24.6	27.6	20.6	6.3
<i>Occupation of Husband</i>							
Professional	153	100	26.1	37.3	17.6	16.3	2.6
Proprietary	189	100	36.0	20.6	28.0	10.6	4.8
Clerical	358	100	18.7	24.6	29.9	21.2	5.6
Skilled	298	100	18.8	26.5	28.2	22.5	4.0
Semiskilled	375	100	14.4	22.7	29.1	24.8	9.1
Unskilled	29	100	13.8	3.4	27.6	27.6	27.6
<i>Net Worth of Couple</i>							
\$10,000 and Over	97	100	45.4	23.7	14.4	14.4	2.1
6,000-9,999	109	100	25.7	40.4	22.0	8.3	3.7
4,000-5,999	114	100	25.4	31.6	26.3	16.7	0.0
2,000-3,999	281	100	21.7	23.1	33.8	14.9	6.4
1,000-1,999	203	100	17.7	21.7	22.7	29.1	8.9
200- 999	307	100	18.2	25.7	31.6	17.6	6.8
0- 200	237	100	13.5	20.2	24.9	34.6	6.8
Net Indebtedness	94	100	17.0	17.0	35.1	19.1	11.7
<i>Shelter Rent at Interview</i>							
\$60 and Over	156	100	30.8	33.3	17.9	16.7	1.3
50-59	110	100	17.3	35.5	24.5	12.7	10.0
35-49	367	100	23.2	28.3	24.0	19.9	4.6
25-34	389	100	21.6	18.5	32.4	21.3	6.2
15-24	328	100	17.1	19.5	33.2	22.6	7.6
Under 15	90	100	11.1	24.4	21.1	30.0	13.3
<i>Education of Husband</i>							
College 4+	174	100	27.0	33.9	17.2	17.8	4.0
College 2-3	102	100	31.4	33.3	25.5	7.8	2.0
College 1	58	100	19.0	24.1	34.5	13.8	8.6
High School 4	315	100	28.9	22.5	27.6	16.2	4.8
High School 3	118	100	17.8	24.6	29.7	26.3	1.7
High School 2	205	100	18.0	28.3	25.9	21.0	6.8
High School 1	134	100	11.9	21.6	29.1	28.4	9.0
Grade School 8	319	100	14.4	19.1	31.0	24.8	10.7

Table 3. The relation of the husband's rating on the summary index of personal adequacy to occupation, net worth of the couple, monthly rent or rental value of the home, and education of the husband.

Again the relationship with personal adequacy is direct (Tables 2-3). Of the husbands in the highest rental group "\$60 and Over", over 64 per cent are above the mean on the summary index of personal adequacy as compared with only about 35 per cent for those in the "Under \$15" rental class. When the

wives are considered, the association is even more pronounced and the consistency is higher.

Education. The relationship between personal adequacy and education is not complete. The expectation of a direct relation, similar to that existing between adequacy and the above variables, is only slightly borne out in the intermediate education classes. However, for both wives and husbands the proportions scoring 80 or higher are about twice as high in the "College 4+" group as in the "Grade School 8" class (Tables 2-3). The relationship is again more sharply defined for wives than for husbands. A possible reason for the lack of consistency in all the educational classes represented is that the difference between reaching the second and the third year in high school, for example, is less meaningful sociologically than the differences between occupational or economic levels. Furthermore, because of the eligibility restrictions no educational class below the eighth grade is represented in the Study. This restriction doubtless affects the character of couples ranking lowest by occupation, net worth, rent, income, etc., but the scales for these items do start from the bottom. Therefore, perhaps one would not expect a highly regular correlation between subjective self-evaluations of feelings of psychological adequacy and educational levels of single years above the eighth grade.

Socio-Economic Status. The index of socio-economic status is an empirically constructed rating of the couples on the basis of their scores on eight social and economic variables.¹⁰ As such, the index is a very useful summary device.

The relation between the rating of the wife and the husband on the index of personal adequacy and their rating on the index of socio-economic status is apparent in Table 4 and Figure 1 (top section). The relationship is clearly positive and, with but

¹⁰ These are: husband's average annual earnings since marriage, net worth, shelter rent at interview, husband's longest occupational class since marriage, purchase price of car, education of husband, education of wife, and rating of the household on Chapin's Social Status Scale.

For the details of the construction of this index, see *Ibid.*, ix. P. 244 (Reprint p. 415). A low index, in this instance, denotes high socio-economic status and *vice versa*.

INDEX OF SOCIO-ECONOMIC STATUS OF THE COUPLE	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY THE RATING OF THE WIFE AND THE HUSBAND ON THE INDEX OF PERSONAL ADEQUACY					
		Total	90 and Over	80-89	70-79	60-69	Under 60
		WIFE					
Under 20 (High)	224	100	20.2	25.4	24.1	22.3	8.0
20-29	243	100	16.1	22.6	27.6	21.4	12.3
30-39	323	100	10.5	20.7	31.3	24.1	13.4
40-49	403	100	8.9	17.6	25.3	33.5	14.7
50 and Over (Low)	251	100	6.8	9.2	20.3	40.6	23.1
		HUSBAND					
Under 20 (High)	224	100	29.9	37.0	17.9	14.3	0.9
20-29	243	100	28.4	27.6	27.2	11.5	5.3
30-39	323	100	21.4	23.2	32.5	17.3	5.6
40-49	403	100	17.6	20.1	28.5	25.6	8.2
50 and Over (Low)	251	100	10.7	19.1	29.1	31.1	10.0

Table 4. The relation of the rating of the spouse on the index of personal adequacy to the score of the couple on the index of socio-economic status.

a few minor exceptions, it is regular and consistent throughout the intermediate classes for both wives and husbands. For both groups, the proportion of respondents with above average (80+) scores on personal adequacy is well over twice as large in the highest as in the lowest socio-economic group. Conversely, the same pattern is apparent with respect to respondents rating low on the adequacy scale.

Economic Security. The measure of "feeling of economic security" used here is the summary index constructed by Kiser and Whelpton for their publication on this subject.¹¹

The relation of the husbands' scores on this index to their

¹¹ Kiser and Whelpton, *op. cit.*, xi. The Interrelation of Fertility, Fertility Planning, and Feeling of Economic Security. See pp. 45-47 (Reprint pp. 471-473) for analysis of the interrelation of these items, and pp. 112-114 (Reprint pp. 538-540) for the mechanics of the construction of the index.

The index represents the sum of the ratings of the wife and husband separately on the following items: interviewer's rating of the wife and husband with respect to feeling of economic security; self-ratings of wives and husbands on extent to which economic security discouraged the couples from having (more) children; degree of confidence in ability to meet future expenses; frequency faced with possibility that husband would have his pay cut or lose his job; frequency of financial help to relatives; and amount of financial help that could be expected from relatives in emergencies.

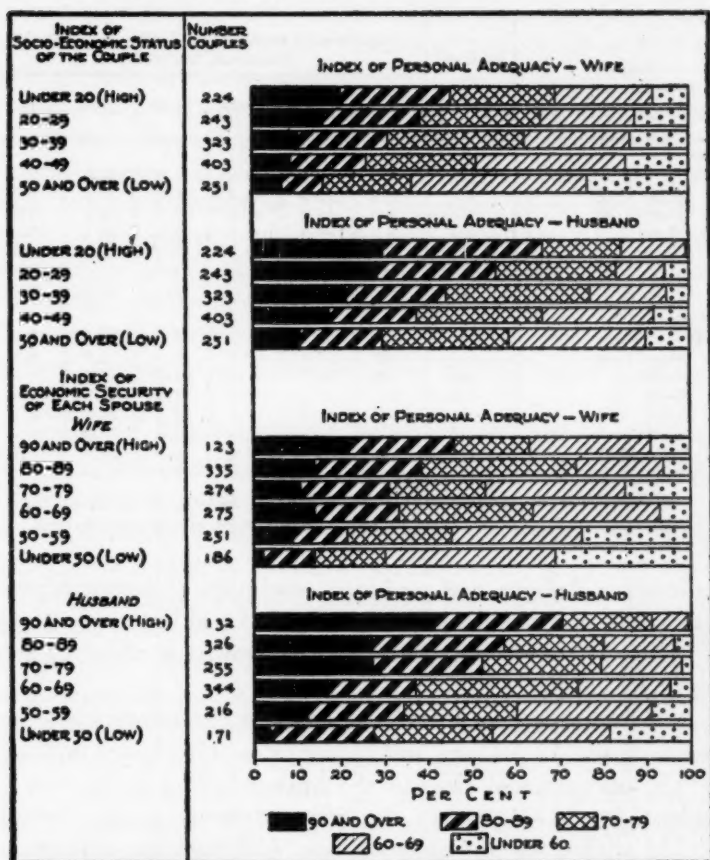


Fig. 1. Percentage distribution by rating of wife and husband on the index of personal adequacy, according to rating of the couple on the index of socio-economic status and rating of each spouse on the index of economic security.

scores on the index of personal adequacy is positive, but not as high as might be expected on theoretical grounds.¹² Nevertheless, a comparison of the two extremes of the adequacy continuum—the “90 and Over” and the “Under 60” categories—

¹² The Pearsonian coefficient of correlation is +.34 for husbands and +.27 for wives. The correlation coefficients in the Indianapolis Study have been very low as a rule. The extent to which this reflects inadequate techniques of measurement is unknown.

INDEX OF ECONOMIC SECURITY	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY RATING ON INDEX OF PERSONAL ADEQUACY					
		Total	90 and Over	80-89	70-79	60-69	Under 60
<i>Wife</i>							
TOTAL	1,444	100	11.8	18.9	26.0	28.9	14.4
90 and Over	123	100	22.0	24.4	17.1	27.6	8.9
80-89	335	100	14.6	23.9	35.5	20.3	5.7
70-79	274	100	10.9	20.1	22.6	31.4	15.0
60-69	275	100	14.2	19.3	30.5	29.1	6.9
50-59	251	100	8.8	13.1	23.5	30.3	24.3
Under 50	186	100	2.2	11.8	16.1	39.2	30.6
<i>Husband</i>							
TOTAL	1,444	100	20.9	24.6	27.6	20.6	6.3
90 and Over	132	100	40.9	29.5	20.5	8.3	0.8
80-89	326	100	27.0	29.8	22.7	16.6	4.0
70-79	255	100	27.1	24.7	27.5	18.4	2.4
60-69	344	100	16.9	19.8	37.2	20.9	5.2
50-59	216	100	12.5	21.8	25.5	30.6	9.7
Under 50	171	100	3.5	24.0	26.3	27.5	18.7

Table 5. The relation of the rating of the wife and the husband on the index of personal adequacy to their rating on the index of economic security.

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indicates a definite and positive association of personal adequacy and economic security (*see* Table 5 and bottom sections of Figure 1). Essentially the same relationship is evident when wives are considered.

It is interesting to note, however, that the relationship between personal adequacy and economic security is not uniform by the occupational class of the husband. The correlation is highest ($r = +.40$) within the proprietary class and lowest ($+ .15$) within the professional class. Although the differences for the remaining occupational classes are slight,¹³ sociological considerations might suggest a relatively high relationship in the proprietary class. The fact that the operation of a small business is so much an integral part of a man's daily life would seem to increase the probability of a sensitive association between psychological and economic security. It is extremely

¹³ The coefficients of correlation between feelings of personal adequacy and economic security of the husband within the remaining occupational groups are as follows: Professional, $+ .15$; Clerical, $+ .28$; Skilled, $+ .29$; and Semiskilled, $+ .30$. The small number of husbands classified as Unskilled (29) does not permit detailed analysis.

risky to generalize in this manner, however, because it might also be argued that the professional person's work is also an integral part of his daily life.

When socio-economic status is held constant, the positive relationship between personal adequacy and economic security is considerably weakened, but it still exists. There are, however, several irregularities in the consistency of the association. For example, the correlation is highest within the lowest socio-economic status category. Nevertheless, the positive relationship is still visible throughout all groups.¹⁴ Thus we cannot say that the test factor wholly interprets the original correlation between feeling of personal adequacy and feeling of economic security.

Summary. The relation of feeling of personal adequacy to the various socio-economic factors presented above may be summarized as a direct association. Whether the measures of socio-economic status are considered individually or collectively, as the variable increases, the proportion of couples rated "adequate" also increases. Similarly, the relation of personal adequacy to economic security is also positive. Again this secondary relationship is partly but not entirely a function of socio-economic status. It exists independently. Although the relationship is not statistically high, the relative consistency and persistency of the association suggest that personal adequacy and economic security are part of the same dimension and that "security" feelings, rather than being compartmentalized, are generalized in nature. This comes as no surprise with respect to American urban middle-class society where individual success is highly stressed and usually measured in economic terms.

¹⁴ The correlation coefficients are:

Socio-Economic Status	Wife	Husband
High	+ .18	+ .13
Medium	+ .12	+ .23
Low	+ .29	+ .29

It must be kept in mind that the summary index of socio-economic status does not consist of "classes" in the social-psychological sense of the term, but rather in a series of discrete continua highly objectified and quantitatively expressed. If anything, the limits to the range of this scale seem to indicate that the couples have been drawn from the middle class. There are only eleven couples in the entire sample in which the husband's average annual income since marriage was \$6,000 or over. The average, of course, is lowered by the fact that it relates to the first 12-15 years of married life and covers a depression period. Nevertheless this hardly suggests the strong representation of an "upper" class in any sense of the word. On the other hand, the educational restrictions which limited inclusion to people with at least a grade school education, and the small number of husbands whose longest occupation since marriage was below the level of semiskilled¹⁵ strongly suggest the absence of a real "lower" class. But yet, even within this relatively confined group, we have evidence of consistent psychological differences. In other words, the 1,444 couples in a selected sample stratified on the basis of objective criteria of socio-economic status, stratify themselves in terms of highly subjective evaluations of their own feelings of personal adequacy.

The remainder of this paper will be devoted to extending the logic of these relationships to fertility-planning and fertility.

PERSONAL ADEQUACY AND FERTILITY PLANNING

The first part of the hypothesis stated: "The stronger the feeling of personal *inadequacy*, the higher the proportion of couples practicing contraception effectively. . . ." The measure of effectiveness of contraceptive practice employed is afforded by the four fertility-planning categories defined above. In this, and in the final section of this report, the component questions pertaining to personal adequacy will be considered

¹⁵ There are 29 unskilled laborers. Miscellaneous groups not included in the occupational classifications are: Service Workers except Domestic and Protective, 23; Protective Service Workers, 13; Farmers and Farm Managers, 3; Farm Laborers and Foremen, 2; and Unknown, 1.

MEASURE OF PERSONAL ADEQUACY	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY PLANNING STATUS				
		Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility
ALL COUPLES	1,444	100	27.9	14.2	31.4	26.5
<i>Chance for Self-Expression:</i>						
<i>Replies of Wives</i>						
Excellent	214	100	32.7	19.2	35.6	14.5
Good	560	100	30.9	15.4	32.7	21.1
Fair	618	100	24.6	11.7	30.6	33.2
Poor or Very Poor	52	100	15.4	11.5	19.2	53.8
<i>Replies of Husbands</i>						
Excellent	253	100	36.4	15.4	27.3	20.9
Good	518	100	29.0	13.5	34.6	23.0
Fair	573	100	24.6	12.2	33.0	30.2
Poor	73	100	19.2	30.1	16.4	34.2
Very Poor	27	100	22.2	14.8	18.5	44.4
<i>Things go Wrong:</i>						
<i>Replies of Wives</i>						
Very Seldom	278	100	34.2	15.8	31.3	18.7
Seldom	370	100	37.3	12.4	30.8	19.5
Sometimes	566	100	24.4	14.8	32.3	28.4
Often	149	100	17.4	8.1	32.2	42.3
Very Often	81	100	7.4	23.5	27.2	42.0
<i>Replies of Husbands</i>						
Very Seldom	267	100	39.0	15.4	25.5	20.2
Seldom	459	100	30.9	14.2	33.1	21.8
Sometimes	539	100	24.5	13.5	34.1	27.8
Often	110	100	19.1	12.7	25.5	42.7
Very Often	69	100	5.8	17.4	31.9	44.9

Table 6. Fertility-planning status by self-rating of wives and husbands regarding opportunity for self-expression, and by the self-rating of wives and husbands on the frequency with which things seem to go wrong for no reason at all.

in addition to the summary index. For purposes of generalization, primary attention has been paid to the proportions within the extreme fertility-planning categories—the “number and spacing planned” and the “excess fertility” groups. Caution should be exercised in reading these tables because of small numerical totals on which the percentages are based, particularly at the extreme parts of the response scales.

As indicated in Tables 6–16, the Indianapolis data definitely reject the first part of the hypothesis. In fact, just the opposite

type of relationship is evident—the stronger the feeling of personal *adequacy*, the higher tends to be the proportion of couples practicing contraception effectively. Having previously seen that a direct relation exists between adequacy and socio-economic status and economic security, and knowing the positive relationship between these latter two variables and fertility planning, we should expect an invalidation of the first part of the hypothesis.

The direct relation of feeling of personal adequacy to fertility planning is clearly supported in most of the response-patterns to the various questions. Especially pronounced associations are apparent in the self-ratings of the couples on the question concerning the opportunity for self-expression whether in their work (homemaking in the case of the wife) or in outside interests. Of those answering that they had an "excellent chance" for self-expression, 33 per cent of the wives and 36 per cent of the husbands fall within the "number and spacing planned" group. Of those reporting only a "poor" or "very poor" chance, only 15 per cent of the wives and 20 per cent of the husbands fall within this fertility-planning category (Table 6). The relationship is more striking when the proportions classified as "excess fertility" are considered. In this instance the relationship is maintained consistently throughout the intermediate classes of the response-scale.

It seems reasonable to assume that opportunity for self-expression is largely a function of socio-economic status, because this position might have bearing upon the amount of leisure time available and at least partially affect the range of outside interests.¹⁰ Although the coefficients of correlation between the index of socio-economic status and opportunity for self-expression are not high in themselves (+.30 for wives and

¹⁰ When socio-economic status is discussed in a theoretical context here, we do not mean simply the particular standard of living but rather the whole complex of sub-cultural values, aspirations and motivations that different life-chances involve. On the other hand, when the *summary index* of socio-economic status is referred to in terms of its statistical relationship to a given variable we are obviously using a relatively crude and imperfect measure which is only inferentially related to the concept of social class.

+ .32 for husbands) they are relatively high in comparison with the usual correlations found in the Indianapolis Study. Furthermore, when the index of socio-economic status is introduced as a constant, the lack of a markedly consistent relationship between chance for self-expression and fertility planning clearly demonstrates the absence of a wholly independent relation. Only within the "40 and Over" socio-economic category¹⁷ is the positive association clearly maintained, and this only when wives are considered. At the other socio-economic status levels, the strength of the positive relationship is considerably diminished.

An especially strong direct relation is also found between fertility planning and the self-ratings of wives and husbands with respect to the frequency with which "things seem to go wrong for no reason at all" (Table 6). Of those replying "very seldom," 34 per cent of the wives and 39 per cent of the husbands fall within the highest fertility-planning group. Of the respondents indicating "very often," only 7 per cent of the wives and 6 per cent of the husbands fall within this planning category. This question would seem to be probing both the degree of rationality (seeing cause and effect) and the extent of psychological adjustment to the personal problems of everyday life, both of which, of course, are included within the concept of "personal adequacy." The direct relation of the response to this question to fertility planning, therefore, theoretically would appear to be a function of the common denominator of rationality which is the essence of planning in general. It has already been established that "a considerable part, but not all, of the relationship between general planning and fertility planning

¹⁷ The "40-49" and the "50 and Over" socio-economic status levels were combined in order to enlarge the cells. These data are not presented in this report.

When the wives are considered, the relation of opportunity for self-expression to fertility planning at this level ("40 and Over") presents the following pattern: 55 per cent of those who answered that they had an "excellent chance" for self-expression are within the "number and spacing planned" and "number planned" classes combined, while only 22 per cent of those who replied that they have only a "poor chance" or "very poor chance" are included in these fertility-planning categories. Conversely, the percentages are 21 and 56 per cent, respectively, for wives represented in the "excess fertility" class.

MEASURE OF PERSONAL ADEQUACY	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY PLANNING STATUS				
		Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility
ALL COUPLES	1,444	100	27.9	14.2	31.4	26.5
<i>Interviewer's Rating of Wife</i>						
Self-Confident	271	100	31.4	20.7	29.5	18.5
Well Satisfied	478	100	27.8	17.8	31.6	22.8
Average	369	100	25.7	10.6	33.9	29.8
Dissatisfied	292	100	28.1	7.5	31.2	33.2
Strong Feelings of Inferiority	28	100	17.9	10.7	25.0	46.4
<i>Interviewer's Rating of Husband</i>						
Self-Confident	244	100	28.7	21.3	32.0	18.0
Well Satisfied	564	100	33.2	15.4	31.0	20.4
Average	372	100	22.8	9.7	36.3	31.2
Dissatisfied	201	100	19.9	11.4	25.9	42.8
Strong Feelings of Inferiority	54	100	33.3	7.4	25.9	33.3

Table 7. Fertility-planning status by the interviewer's rating of wife and husband on personal inadequacy.

results from their joint connection to socio-economic status.¹⁸ When the index of socio-economic status is held constant, however, the original positive association of fertility-planning status and the replies to the question on frequency with which "things go wrong for no reason at all" remains relatively intact. In other words, this criterion of "rationality" is directly related to fertility planning within each socio-economic status group as well as to socio-economic status itself.¹⁹ The intensity of the original relationship is again weakened, however, and this indicates the intervening influence of socio-economic status.

The interviewer's rating of personal adequacy similarly reveals a marked positive association with fertility planning, particularly when the rating of the wife is considered (Table 7). With the exception of the husband's opinion of the wife, a

¹⁸ Freedman, Ronald and Whelpton, P.K.: Social and Psychological Factors Affecting Fertility. XII. The Relationship of General Planning to Fertility Planning and Fertility Rates. The Milbank Memorial Fund Quarterly, April, 1951, xxix, No. 2, p. 233 (Reprint p. 564).

¹⁹ The coefficients of correlation for the replies to this question and socio-economic status are +.28 and +.27 for wives and husbands, respectively.

MEASURE OF PERSONAL ADEQUACY	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY PLANNING STATUS				
		Total	Number and Spacing Planned	Number Planned †	Quasi- Planned	Excess Fertility
ALL COUPLES	1,444	100	27.9	14.2	31.4	26.5
<i>Upset Easily:</i>						
<i>Replies of Wives</i>						
Very Calm	43	100	30.2	11.6	44.2	14.0
Quite Calm	245	100	29.0	13.1	28.6	29.4
Ordinary	694	100	29.3	14.1	33.0	23.6
Easily	324	100	27.5	13.9	30.2	28.4
Very Easily	138	100	19.6	18.1	27.5	34.8
<i>Replies of Husbands</i>						
Very Calm	170	100	35.3	8.8	32.4	23.5
Quite Calm	472	100	29.2	16.3	32.4	22.0
Ordinary	602	100	23.1	15.1	32.6	29.2
Easily	165	100	31.5	12.1	26.1	30.3
Very Easily	35	100	40.0	5.7	20.0	34.3
<i>Wife's Opinion of Husband</i>						
Very Calm	245	100	35.1	16.3	29.8	18.8
Quite Calm	459	100	24.4	17.0	31.4	27.2
Ordinary	493	100	31.6	11.8	31.8	24.7
Easily	167	100	22.8	9.0	37.1	31.1
Very Easily	80	100	13.8	17.5	22.5	46.3
<i>Husband's Opinion of Wife</i>						
Very Calm	64	100	26.6	17.2	23.4	32.8
Quite Calm	300	100	29.3	15.0	32.7	23.0
Ordinary	635	100	29.0	12.9	31.3	26.8
Easily	319	100	24.5	16.6	33.2	25.7
Very Easily	126	100	28.6	11.1	28.6	31.7

Table 8. Fertility-planning status by self-rating of wives and husbands, and rating of the spouse, regarding tendency to get upset easily.

relatively consistent relationship is manifested when tendency to get upset easily is used as the measure of personal adequacy (Table 8).

The pattern of association between feeling of adequacy and fertility planning does not maintain equal intensity or consistency for all of the individual questions. Although the data do not afford a single instance of a relationship of the type stated in the hypothesis, there are a number of instances in which the positive relationship is very weak and a few cases in which no relationship of any kind is evident. Illustrations of the former type may be seen in Table 9, where only a slight

trend is discernible in the self-ratings of the wife and the husband to the question on inclination to worry. An example of a lack of any trend is found in the same table in the rating of the wife by the husband on her tendency to worry. Apparently, inclination to worry is only slightly related to fertility planning. The same conclusion can be drawn with respect to the ex-

Table 9. Fertility-planning status by self-rating of wives and husbands, and rating of the spouse, on inclination to worry.

MEASURE OF PERSONAL ADEQUACY	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY PLANNING STATUS				
		Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility
ALL COUPLES	1,444	100	27.9	14.2	31.4	26.5
<i>Inclination to Worry:</i>						
<i>Replies of Wives</i>						
Very Little	90	100	27.8	22.2	31.1	18.9
Little	169	100	30.2	13.0	34.3	22.5
Less Than Average	119	100	21.0	20.2	35.3	23.5
About Average	522	100	28.9	11.7	32.2	27.2
More Than Average	225	100	31.1	14.2	32.0	22.7
Much	131	100	23.7	7.6	32.8	35.9
Very Much	188	100	26.6	19.1	22.9	31.4
<i>Replies of Husbands</i>						
Very Little	226	100	25.7	19.5	35.0	19.9
Little	208	100	31.7	13.0	28.4	26.9
Less Than Average	163	100	31.3	12.9	33.1	22.7
About Average	471	100	23.1	14.2	33.5	29.1
More Than Average	226	100	33.2	13.7	30.5	22.6
Much	88	100	36.4	10.2	14.8	38.6
Very Much	62	100	19.4	9.7	35.5	35.5
<i>Wife's Opinion of Husband</i>						
Very Little	160	100	31.3	15.6	32.5	20.6
Little	232	100	28.9	15.9	29.7	25.4
Less Than Average	165	100	33.9	17.0	25.5	23.6
About Average	576	100	24.8	13.7	33.9	27.6
More Than Average	159	100	35.2	6.9	35.2	22.6
Much	69	100	17.4	8.7	24.6	49.3
Very Much	83	100	22.9	22.9	27.7	26.5
<i>Husband's Opinion of Wife</i>						
Very Little	55	100	21.8	23.6	30.9	23.6
Little	186	100	31.2	14.0	28.5	26.3
Less Than Average	139	100	27.3	16.5	36.0	20.1
About Average	597	100	26.5	11.4	31.8	30.3
More Than Average	276	100	30.8	15.6	32.2	21.4
Much	111	100	26.1	15.3	35.1	23.4
Very Much	80	100	28.8	18.8	20.0	32.5

pressed self-confidence level of the respondents and its relation to fertility planning (Table 10). The ratings of husbands and wives on the "pep and energy" scale exhibit only a weak positive relation to fertility planning. The bearing of this particular variable on fertility planning has been discussed in a previous report.²⁰ The self-ratings of husbands on the kind of man-

Table 10. Fertility-planning status by self-rating of wives and husbands, and rating of the spouse, on extent of self-confidence.

MEASURE OF PERSONAL ADEQUACY	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY PLANNING STATUS				
		Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility
ALL COUPLES	1,444	100	27.9	14.2	31.4	26.5
<i>Self-Confidence</i>						
<i>Replies of Wives</i>						
Very Much	123	100	32.5	23.6	26.8	17.1
Much	139	100	23.7	12.9	25.2	38.1
Above Average	131	100	38.2	18.3	23.7	19.8
About Average	881	100	27.0	12.8	32.3	27.8
Below Average	121	100	24.0	7.4	47.9	20.7
Little	49	100	26.5	24.5	24.5	24.5
<i>Replies of Husbands</i>						
Very Much	281	100	28.5	18.9	27.0	25.6
Much	248	100	32.3	13.7	29.4	24.6
Above Average	248	100	30.6	10.5	38.7	20.2
About Average	616	100	23.5	14.4	32.0	30.0
Below Average	40	100	40.0	2.5	25.0	32.5
Little	11	*	—	—	—	—
<i>Wife's Opinion of Husband</i>						
Very Much	219	100	26.0	23.7	29.7	20.5
Much	234	100	30.8	14.1	30.3	24.8
Above Average	197	100	33.5	13.2	29.9	23.4
About Average	720	100	26.8	11.7	33.1	28.5
Below Average	51	100	23.5	15.7	27.5	33.3
Little	23	100	13.0	8.7	30.4	47.8
<i>Husband's Opinion of Wife</i>						
Very Much	183	100	29.5	13.7	29.5	27.3
Much	183	100	35.0	15.3	26.2	23.5
Above Average	270	100	27.4	17.8	31.9	23.0
About Average	693	100	25.4	13.3	32.6	28.7
Below Average	76	100	31.6	9.2	38.2	21.1
Little	37	100	24.3	13.5	29.7	32.4

* Percentages not computed.

²⁰ Cf. Herrera, Lee F. and Kiser, Clyde V.: Social and Psychological Factors (Continued on page 260)

MEASURE OF PERSONAL ADEQUACY	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY PLANNING STATUS				
		Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility
ALL COUPLES	1,444	100	27.9	14.2	31.4	26.5
<i>Kind of Manager:</i>						
<i>Replies of Husbands</i>						
Excellent	29	100	34.5	6.9	24.1	34.5
Very Good	99	100	29.3	15.2	27.3	28.3
Good	336	100	39.0	14.6	27.4	19.0
About Average	871	100	24.2	14.1	33.5	28.1
Less Than Average	59	100	18.6	15.3	37.3	28.8
Poor	48	100	18.8	14.6	29.2	37.5
<i>Type of Job Could Do in Raising Several Children</i>						
<i>Replies of Wives</i>						
Excellent	97	100	34.0	22.7	30.9	12.4
Very Good	295	100	25.4	20.7	27.1	26.8
Good	648	100	29.5	12.3	33.5	24.7
Fair	378	100	24.3	10.8	32.5	32.3
Poor	25	100	48.0	—	16.0	36.0
<i>Replies of Husbands</i>						
Excellent	203	100	28.1	19.7	27.1	25.1
Very Good	394	100	24.9	15.7	33.0	26.4
Good	554	100	31.9	13.0	30.1	24.9
Fair	267	100	23.2	10.9	34.1	31.8
Poor	26	100	34.6	7.7	42.3	15.4

Table 11. Fertility-planning status by the self-rating of the husband on his abilities as a manager and by self-rating of wife and husband on the type of job they could do in raising several children.

ager they feel they are presents a similar situation (Table 11).²¹

A rather curious pattern of association with fertility planning is present in the distribution of responses to the question concerning the type of job the wife and husband felt they could do in raising several children (Table 11). The replies of the wives exhibit a relatively consistent, direct relation to fertility planning except in the "poor" category which is represented by only twenty-five cases. The replies of the husbands, on the other

Affecting Fertility. XIII. Fertility in Relation to Fertility Planning and Health of Wife, Husband, and Children. The Milbank Memorial Fund Quarterly, July, 1951, xxix, No. 3, p. 337-338, 345.

²¹ See also Freedman and Whelpton, *op. cit.* XII. Pp. 218-243 (Reprint pp. 549-574).

hand, exhibit little or no relation to fertility-planning status. A clue to this anomaly may lie partially in the fact that whereas 41 per cent of the husbands rated themselves as capable of doing an "excellent" or "very good" job in raising several children (aside from financial matters), only about 27 per cent

Table 12. Fertility-planning status by self-rating and by rating of the spouse on feeling of cheerfulness and optimism.

MEASURE OF PERSONAL ADEQUACY	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY PLANNING STATUS				
		Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility
ALL COUPLES	1,444	100	27.9	14.2	31.4	26.5
<i>Feel Cheerful</i>						
<i>Replies of Wives</i>						
Extremely	55	100	43.6	18.2	25.5	12.7
Very	221	100	30.3	17.6	29.9	22.2
Rather	496	100	31.7	14.3	29.4	24.6
Ordinary	607	100	22.2	12.0	34.1	31.6
Rather "Blue"	61	100	32.8	16.4	34.4	16.4
Very or Extremely "Blue"	4	*	*	*	*	*
<i>Replies of Husbands</i>						
Extremely	68	100	42.6	5.9	38.2	13.2
Very	214	100	30.4	22.9	21.5	25.2
Rather	547	100	30.0	16.1	32.7	21.2
Ordinary	554	100	22.9	10.1	35.2	31.8
Rather "Blue"	59	100	28.8	13.6	13.6	44.1
Very or Extremely "Blue"	2	*	*	*	*	*
<i>Wife's Opinion of Husband</i>						
Extremely	77	100	32.5	15.6	33.8	18.2
Very	241	100	34.9	19.9	31.5	13.7
Rather	499	100	28.3	13.2	37.1	21.4
Ordinary	526	100	25.9	13.5	26.4	34.2
Rather "Blue"	85	100	17.6	7.1	30.6	44.7
Very or Extremely "Blue"	16	*	*	*	*	*
<i>Husband's Opinion of Wife</i>						
Extremely	44	100	29.5	13.6	27.3	29.5
Very	257	100	38.1	13.6	27.2	21.0
Rather	552	100	26.3	16.3	30.4	27.0
Ordinary	488	100	22.7	12.9	35.2	29.1
Rather "Blue"	96	100	33.3	11.5	32.3	22.9
Very or Extremely "Blue"	7	*	*	*	*	*

* Percentages not computed.

of the wives so evaluated themselves. The difference may reflect the fact that a mother spends much more time with the children than does the father and because of her greater experience in facing the problems of child-rearing she may tend to be

Table 13. Fertility-planning status by the self-rating of wives and husbands on questions regarding share of good breaks and luckiness in friends, and by self-rating of husbands on whether they have been lucky in the people for whom and with whom they have worked.

MEASURE OF PERSONAL ADEQUACY	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY PLANNING STATUS				
		Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility
ALL COUPLES	1,444	100	27.9	14.2	31.4	26.5
<i>Share of Good Breaks:</i>						
<i>Replies of Wives</i>						
Definitely Yes	280	100	39.3	14.6	27.5	18.6
Probably Yes	850	100	29.5	15.1	30.9	24.5
Doubtful	198	100	14.1	11.1	35.4	39.4
Probably No	77	100	10.4	10.4	35.1	44.2
Definitely No	39	100	15.4	15.4	43.6	25.6
<i>Replies of Husbands</i>						
Definitely Yes	260	100	34.3	15.0	28.8	21.9
Probably Yes	817	100	31.0	13.2	29.9	25.9
Doubtful	238	100	19.3	13.0	40.3	27.3
Probably No	83	100	14.5	15.7	37.3	32.5
Definitely No	46	100	6.5	30.4	17.4	45.7
<i>Lucky in Friends:</i>						
<i>Replies of Wives</i>						
Very Lucky	457	100	34.4	17.5	33.0	15.1
Rather Lucky	633	100	28.0	12.6	29.5	29.9
Neither	297	100	18.5	11.8	33.3	36.4
Rather Unlucky	36	100	22.2	22.2	30.6	25.0
Very Unlucky	21	100	28.6	9.5	28.6	33.3
<i>Replies of Husbands</i>						
Very Lucky	368	100	33.7	10.3	31.0	25.0
Rather Lucky	649	100	25.0	15.7	35.3	29.0
Neither	320	100	26.6	15.9	22.5	35.0
Rather Unlucky	64	100	23.4	14.1	42.2	20.3
Very Unlucky	41	100	36.6	12.2	29.3	22.0
<i>Lucky in Employment:</i>						
<i>Replies of Husbands</i>						
Very Lucky	447	100	34.0	13.6	30.9	21.5
Rather Lucky	625	100	24.3	14.7	35.8	25.1
Neither	248	100	25.0	12.5	26.2	36.3
Rather Unlucky	83	100	27.7	20.5	16.9	34.9
Very Unlucky	37	100	27.0	10.8	35.1	27.0

less presumptuous than her husband about success in child-rearing.

Of the four questions asked about feeling of cheerfulness and optimism, only two were retained in the summary index of personal adequacy. The responses to these two questions, opinions of each spouse about cheerfulness of the other spouse (Table 12) exhibit only a moderate direct relation of "cheerfulness" to fertility-planning status. The marked skewness of the distributions, with only sixteen and seven cases in the two "very or extremely blue" categories is again noteworthy. The self-ratings of wives and husbands on "cheerfulness" present a similar situation. The slight relationship that does exist virtually disappears when socio-economic status is held constant.

With respect to the other items excluded from the summary index on the basis of the item analysis, only the responses to the questions regarding "share of good breaks" bear a fairly consistent positive relation to fertility planning (Table 13). It seems clear that whether or not a person considers himself lucky in this respect would be at least partially influenced by his socio-economic status. When socio-economic status is held constant, the direct association of "share of good breaks" with fertility planning is considerably weakened but it persists. It is, of course, impossible to determine whether the feeling that one has had his or her "share of good breaks" precedes or reflects effective planning of family size. The same may be said of many of the other questions yielding positive associations with fertility planning. The remaining excluded questions which presume to measure luck in friendships and in employment situations (Table 13), and difficulty in making up one's mind (Table 14) all fail to reveal any pronounced relationship to fertility planning.

It is significant to note that the positive relationship between fertility-planning status and feeling of personal adequacy, as measured by the questions in Tables 6-14, is most marked and most consistent when the replies of the wives and their

MEASURE OF PERSONAL ADEQUACY	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY PLANNING STATUS				
		Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility
ALL COUPLES	1,444	100	27.9	14.2	31.4	26.5
<i>Difficulty Making Up Mind:</i>						
<i>Replies of Wives</i>						
Very Seldom	440	100	32.7	16.6	29.5	21.1
Seldom	460	100	27.4	13.5	32.2	27.0
Sometimes	414	100	24.4	15.0	30.4	30.2
Often	82	100	22.0	9.8	39.0	29.3
Very Often	48	100	29.2	—	37.5	33.3
<i>Replies of Husbands</i>						
Very Seldom	401	100	25.9	18.0	32.7	23.4
Seldom	605	100	28.1	14.2	32.7	25.0
Sometimes	348	100	27.3	10.6	30.2	31.9
Often	59	100	44.1	16.9	10.2	28.8
Very Often	31	100	25.8	—	45.2	29.0
<i>Wife's Opinion of Husband</i>						
Very Seldom	573	100	33.7	15.0	29.7	21.6
Seldom	511	100	23.1	13.3	36.2	27.4
Sometimes	280	100	27.5	12.1	27.9	32.5
Often	59	100	13.6	23.7	30.5	32.2
Very Often	20	100	35.0	10.0	15.0	40.0
<i>Husband's Opinion of Wife</i>						
Very Seldom	386	100	28.5	15.3	32.6	23.6
Seldom	604	100	27.6	16.9	30.1	25.3
Sometimes	355	100	26.5	10.4	32.1	31.0
Often	68	100	32.4	10.3	39.7	17.6
Very Often	29	100	27.6	—	17.2	55.2

Table 14. Fertility-planning status by the self-rating and rating of spouse on difficulty making up mind.

opinions of their husbands are considered. In decreasing order of positive correlation are the replies of the husbands and their ratings of their wives. The relation of fertility-planning status to husband's opinion of the wife's adequacy is extremely weak in all of the six instances presented.²²

The summary indices of personal adequacy which were constructed for the wives and husbands represent the totals of their respective scores on all the separate questions presented above with the exception of those specifically noted otherwise. The relation of these summary scores to fertility planning is pre-

²² The interrelation of questions of these types is discussed in the Appendix.

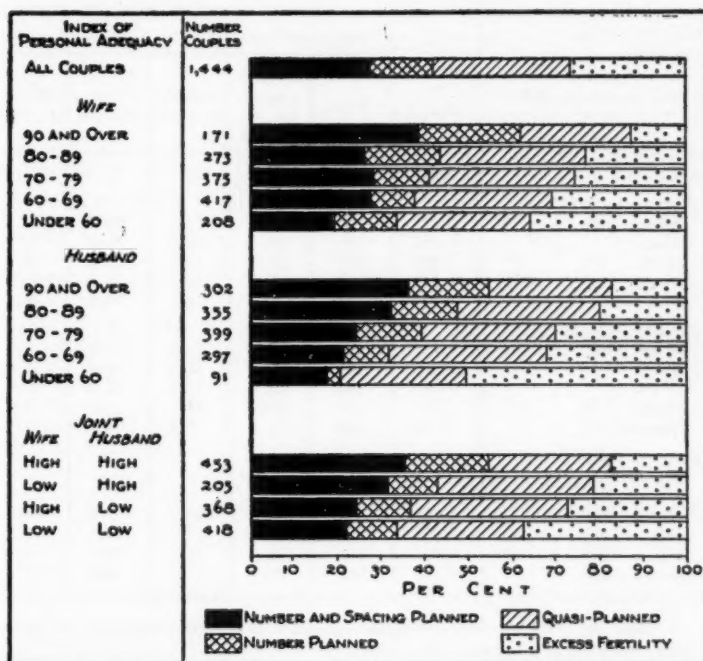


Fig. 2. Percentage distribution by fertility-planning status, according to separate and joint ratings of the wife and husband on the index of personal adequacy.

sented in Figure 2, Table 15. It is readily apparent that the relationship is direct, and that it is very consistent throughout the intermediate scale intervals. There is even a marked consistency in the direct relation between adequacy and proportions classified as "number planned"—a fertility-planning category which has been very irregular in previous instances. Thus, if we consider all "planned families" (the "number and spacing planned" and the "number planned" categories combined) we see that within the "90 and Over" interval, 62 per cent of the wives are represented, as contrasted with only 34 per cent in the "Under 60" class. The distribution by the scores of the husbands is similar, with 55 per cent of the "90 and Over" class having "planned" their families and only 21 per cent classified

INDEX OF PERSONAL ADEQUACY	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY PLANNING STATUS				
		Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility
ALL COUPLES	1,444	100	27.9	14.2	31.4	26.5
Summary Index (Wife)						
90 and Over	171	100	39.2	22.8	25.7	12.3
80-89	273	100	26.7	16.9	33.0	23.4
70-79	375	100	28.5	12.8	33.3	25.3
60-69	417	100	27.8	10.1	31.4	30.7
Under 60	208	100	19.2	14.4	30.8	35.6
Summary Index (Husband)						
90 and Over	302	100	36.1	18.5	28.1	17.2
80-89	355	100	32.4	15.5	32.1	20.0
70-79	399	100	24.6	15.0	30.6	29.8
60-69	297	100	21.9	10.4	36.0	31.6
Under 60	91	100	17.6	3.3	28.6	50.5
Summary Index (Joint)						
Wife Husband						
High High	453	100	35.3	19.2	28.0	17.4
Low High	205	100	31.2	11.7	35.6	21.5
High Low	368	100	24.0	12.5	36.1	27.4
Low Low	418	100	21.8	11.5	28.9	37.8

Table 15. Fertility-planning status by index of personal adequacy of the wife, husband, and couple.

as "planners" in the "Under 60" category. The relation is also sharply pronounced with reference to proportions within the "excess fertility" category.²³

When the scores on adequacy of husband and wife are jointly considered,²⁴ an interesting pattern appears (Figure 2, Table

²³ A face examination of the criteria for inclusion in the various fertility-planning categories suggests that the "quasi-planned" group (454 couples who did not deliberately plan their last pregnancy but who either wanted the last pregnancy or wanted another pregnancy) probably has the most heterogeneous composition of all four categories. It would seem that the above definition presents the greatest opportunity for post-factum rationalization (the unwanted pregnancy becomes the wanted child). This unavoidable weakness of the "Quasi-planned" category probably accounts partially for the lack of consistent relationships that have been apparent when presented for this group. Its intermediate status is another factor.

²⁴ This joint index was constructed by dichotomizing the distributions of scores for husbands and wives and adjusting for the skewness of the distribution of the husbands' scores. Thus the "both high" class is composed of the wives who scored from 70 to 119 and whose husbands scored from 80 to 119 on the summary index of personal adequacy; the "wife low, husband high" category represents the wives who scored from 30 to 69 and their husbands who scored from 80 to 119; the "wife

(Continued on page 267)

INDEX OF PERSONAL ADEQUACY	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY PLANNING STATUS				
		Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility
ALL COUPLES	1,309	100.1	21.2	15.4	34.4	29.1
Summary Index (Wife)						
90 and Over	147	100.1	30.6	26.5	28.6	14.3
80-89	253	100.0	22.1	17.4	35.2	25.3
70-79	336	100.0	20.5	14.3	36.9	28.3
60-69	385	99.9	22.3	10.4	34.0	33.2
Under 60	188	100.0	11.2	15.9	34.1	38.8
Summary Index (Husband)						
90 and Over	268	100.0	30.6	20.9	31.3	17.2
80-89	339	99.9	23.9	15.6	33.0	27.4
70-79	364	100.0	17.9	15.9	33.5	32.7
60-69	248	99.9	16.1	12.5	42.7	28.6
Under 60	90	100.0	10.0	3.3	28.9	57.8
Summary Index (Joint)						
Wife Husband						
High High	401	100.0	28.2	21.2	30.9	19.7
Low High	191	100.0	26.2	12.6	38.2	23.0
High Low	336	100.0	17.0	13.7	39.3	30.0
Low Low	381	100.0	14.9	12.1	31.8	41.2

Table 16. Fertility-planning status among fertile couples, by index of personal adequacy of the wife, husband, and couple.

15). A comparison of two extreme "personal adequacy" groups—husband and wife both high, and both low—exhibits the now-expected direct relation to fertility planning. A comparison of the two intermediate combinations indicates that the "wife low-husband high" group is above the "wife high-husband low" group with respect to fertility planning. The joint classifications, contrary to the results of the component items, suggest that the feeling of adequacy of the husband is a slightly more important consideration in determining the effectiveness of planning the size of family.

It has been suggested that since the childless couples are by definition virtually restricted to the "number and spacing planned" category and since childless couples are presumably

high, husband low" class combines the wives with scores from 70 to 119 with their husbands who scored from 30 to 79; and finally, the "both low" class represents wives scoring from 30 to 69 and their husbands who scored from 30 to 79.

very different from families with children with respect to social life, interests, home life, mobility, etc., they should be excluded from analyses concerning the relation of personal adequacy to fertility-planning status. Although this position can be argued,²⁵ it is felt that it is a sufficiently important criticism to merit presenting the relation of feeling of personal adequacy to the fertility-planning status of the *fertile* couples only. The data (Table 16) do not support the view of the presumed importance of the childless families, at least with respect to personal adequacy. Essentially the same pattern of association with fertility planning emerges for fertile couples as for "all couples": 57 per cent of wives in the "90 and Over" category are classified in the two highest fertility-planning groups, and only 27 per cent of wives in the "Under 60" category are so classified; 52 per cent of the husbands in the "90 and Over" category as contrasted with only 13 per cent in the "Under 60" group are in "planned families." The results by the joint index of personal adequacy are also the same for fertile couples as for all couples.

A partial answer to the question of whether planning family size is related more to economic security or to personal adequacy is provided in Table 17. With feeling of economic security held constant, the percentage of planned families *still* varies directly with position on the personal adequacy index. The direction of the relationship is completely consistent for both wives and husbands within each economic security class. On the other hand, when feeling of personal adequacy is held constant, the direct relation of economic security to effective fertility-planning is considerably weakened and becomes irregular. Feeling of personal adequacy would thus appear to be independent of feeling of economic security with reference to fertility-planning.

²⁵ The opposing argument is that the "number and spacing planned" category includes not only those couples who plan "positively," i.e., who plan the number and the spacing of their children and actually have children, but also "negative" planners, i.e., those who consistently and effectively take precautions *not* to have any children. In terms of both the degree of rationality employed and contraceptive success, the two groups may be viewed as basically the same.

Previous investigations have revealed that a definite relationship between fertility planning and a given variable tends to be either weakened or to disappear completely when socio-economic status is introduced as a test factor.²⁶ In the preceding sections of this report, we have seen that a direct relation exists between feeling of personal adequacy and socio-economic status. We have also noted a direct relation between adequacy and fertility planning. Is this latter relationship a real association, with one variable to be explained in terms of the other,

Table 17. Per cent distribution by fertility-planning status, according to joint rating of each spouse on index of economic security and index of personal adequacy.¹

JOINT RATING		NUMBER OF COUPLES	PER CENT DISTRIBUTION BY PLANNING STATUS			
Economic Security	Personal Adequacy		Total	Planned Families	Quasi- Planned	Excess Fertility
WIFE						
High	High	186	100	54.3	29.0	16.7
High	Medium	140	100	45.7	32.1	22.1
High	Low	132	100	38.6	34.1	27.3
Medium	High	177	100	48.0	31.1	20.9
Medium	Medium	146	100	39.0	32.2	28.8
Medium	Low	226	100	35.8	31.9	32.3
Low	High	81	100	48.1	30.9	21.0
Low	Medium	89	100	38.2	37.1	24.7
Low	Low	267	100	36.0	29.2	34.8
HUSBAND						
High	High	278	100	55.8	29.5	14.7
High	Medium	101	100	44.6	30.7	24.8
High	Low	79	100	38.0	36.7	25.3
Medium	High	258	100	47.7	31.0	21.3
Medium	Medium	198	100	34.3	33.8	31.8
Medium	Low	143	100	30.1	36.4	33.6
Low	High	121	100	47.1	30.6	22.3
Low	Medium	100	100	45.0	24.0	31.0
Low	Low	166	100	25.3	31.3	43.4

¹In this table the categories are as follows: *Index of Economic Security*: High, 80 and over; Medium, 60-79; Low, under 60. *Index of Personal Adequacy*: High 80 and over, Medium, 70-79; Low, under 70.

²⁶ Cf. Freedman, Ronald and Whelpton, P.K.: Social and Psychological Factors Affecting Fertility. x. Fertility Planning and Fertility Rates by Religious Interest and Denomination. The Milbank Memorial Fund *Quarterly*, July, 1950, xxviii, No. 3, p. 318 (Reprint p. 441). See especially *op. cit.*, Kiser and Whelpton. xi. The Interrelation of Fertility, Fertility Planning and Feeling of Economic Security. Pp. 62-69 (Reprint pp. 488-495).

or are both variables functions of a third factor, socio-economic status? The answer is not altogether clear. The data indicate (Table 18) that when socio-economic status is held constant,

Table 18. Fertility-planning status by index of personal adequacy of the wife, husband, and couple, subdivided by socio-economic status.

INDEX OF PERSONAL ADEQUACY		NUMBER OF COUPLES	PER CENT DISTRIBUTION BY PLANNING STATUS				
			Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility
Summary Index			INDEX HIGH SOCIO-ECONOMIC STATUS (UNDER 20)				
<i>Wife</i>							
90 and Over	45	100	51.1	11.1	24.4	13.3	
70-89	111	100	52.3	19.8	15.3	12.6	
Under 70	68	100	41.2	8.8	39.7	10.3	
			INDEX MEDIUM SOCIO-ECONOMIC STATUS (20-39)				
90 and Over	73	100	41.1	27.4	26.0	5.5	
70-89	290	100	28.3	15.2	36.6	20.0	
Under 70	203	100	32.0	11.3	36.0	20.7	
			INDEX LOW SOCIO-ECONOMIC STATUS (40 AND OVER)				
90 and Over	53	100	26.4	26.4	26.4	20.8	
70-89	247	100	16.2	11.3	37.2	35.2	
Under 70	354	100	17.8	12.1	26.8	43.2	
Summary Index			INDEX HIGH SOCIO-ECONOMIC STATUS (UNDER 20)				
<i>Husband</i>							
90 and Over	67	100	50.7	22.4	14.9	11.9	
70-89	123	100	49.6	11.4	28.5	10.6	
Under 70	34	100	41.2	11.8	29.4	17.6	
			INDEX MEDIUM SOCIO-ECONOMIC STATUS (20-39)				
90 and Over	137	100	35.0	17.5	32.8	14.6	
70-89	314	100	29.9	17.5	36.0	16.6	
Under 70	115	100	30.4	7.0	34.8	27.8	
			INDEX LOW SOCIO-ECONOMIC STATUS (40 AND OVER)				
90 and Over	98	100	27.6	17.3	30.6	24.5	
70-89	317	100	18.3	14.5	27.8	39.4	
Under 70	239	100	13.4	9.2	34.7	42.7	

Table 18. (Continued)

INDEX OF PERSONAL ADEQUACY	NUMBER OF COUPLES	PER CENT DISTRIBUTION BY PLANNING STATUS					
		Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility	
<i>Joint Index for the Couple¹</i>		INDEX HIGH SOCIO-ECONOMIC STATUS (UNDER 20)					
<i>Wife</i>	<i>Husband</i>						
High	High	108	100	50.0	21.3	15.7	13.0
Low	High	42	100	47.6	9.5	40.5	2.4
High	Low	48	100	56.3	8.3	22.9	12.5
Low	Low	26	100	30.8	7.7	38.5	23.1
		INDEX MEDIUM SOCIO-ECONOMIC STATUS (20-39)					
<i>Wife</i>	<i>Husband</i>						
High	High	194	100	33.0	19.6	33.0	14.4
Low	High	87	100	37.9	12.6	35.6	13.8
High	Low	171	100	28.7	15.2	36.2	19.9
Low	Low	114	100	27.2	10.5	36.0	26.3
		INDEX LOW SOCIO-ECONOMIC STATUS (40 AND OVER)					
<i>Wife</i>	<i>Husband</i>						
High	High	151	100	27.8	17.2	30.5	24.5
Low	High	76	100	14.5	11.8	32.9	40.8
High	Low	149	100	8.1	10.7	40.3	40.9
Low	Low	278	100	18.7	12.2	25.2	43.9

¹ See text footnote 24 for meaning of high, medium, and low categories in the joint classification.

much of the original association of fertility planning to personal adequacy disappears, although the positive direction of the relationship is, for the most part, still maintained. Chi squares were computed for the distributions of fertility-planning status by the indices of personal adequacy for the couple and each spouse separately, with socio-economic status controlled. With the exception of the distributions for the wives and husbands in the "Under 20" socio-economic group, the association of the two variables (at the extremes)²⁷ is statistically significant at the .01 level.

²⁷ Instead of making individual tests of the significance of the differences between successive personal-adequacy classes with respect to fertility planning, chi squares were computed only for the relation of extremes of the indices—the "both high" and (Continued on page 272)

Thus, although the original relationship is considerably weakened, it is not sufficiently reduced (nor are the differences encountered statistically nonsignificant) to permit attributing the relationship entirely to socio-economic status. Unfortunately, intensive analysis of these detailed data is impossible since the numbers involved become very small with successive subdivisions. This obviously renders impossible any definitive conclusion about the independence of the relation of fertility planning to personal adequacy. On the other hand, Table 18 indicates that fertility planning consistently bears a positive relation to socio-economic status when personal adequacy is held constant. Thus a considerable part, but not all, of the relationship between personal adequacy and fertility planning is due to their joint connection to socio-economic status. The index of socio-economic status only abbreviates a wide variety of cultural and psychological phenomena, such as competitive effort, success-drive, social mobility, sensitivity to social pressures, and the like. It appears then, finally, that success in planning family size is positively correlated with both feeling of personal adequacy and the many factors reflected by the index of socio-economic status, although the latter seem definitely to be the more important.

PERSONAL ADEQUACY AND FERTILITY

The second part of the hypothesis states: "The stronger the feeling of personal inadequacy . . . the smaller the planned families." Or restated in a positive fashion—the stronger the feeling of personal *adequacy* . . . *the larger* the planned families.

We have already seen that several relationships exist: a direct relation between feeling of personal adequacy and fertility-planning status which, we recall, is the opposite of the association presumed in the first part of the hypothesis; a direct

"both low" groups in the case of the couple, and the "90 and Over" and "Under 70" categories for the husbands and wives separately—to the "planned families" (the "number and spacing planned" and "number planned" categories combined) and the "excess fertility" group. This resulted in four-fold tables.

relation between feeling of personal adequacy and socio-economic status; and a direct relation of feeling of personal adequacy to feeling of economic security.

With reference to fertility, previous analyses have also demonstrated a direct relation of fertility to socio-economic status and feeling of economic security within the "number and spacing planned" group and an inverse relation within the "excess fertility" group, with little or mixed association within the "number planned" and "quasi-planned" groups. It is well to re-emphasize that most of the hypotheses (including the present one) throughout the Indianapolis Study are concerned with the reproductive behavior of the *planned* families, the most important component of which is the "number and spacing planned" group. The rationale of this is embodied in the attempt to isolate the social and psychological factors affecting fertility with planning differences eliminated as intervening variables.

These foregoing findings suggest the expectation of a similar direct relation of personal adequacy to fertility for the planned families, and an inverse relation for the less effectively planned families, i.e., a verification of the second part of the hypothesis. This is not an inevitable outcome, however, because, as we have seen, the interrelations of personal adequacy and socio-economic status and economic security are far from perfect.

For purposes of comparison, the fertility rates of all couples in the sample will be considered first, although the reproductive behavior of the planned families is of primary concern. The relation of fertility to the various indicators of personal adequacy among all couples is either non-existent or inverse. For the questions included in the summary indices, an inverse relationship characterizes about half. For the ten questions excluded from the indices, eight exhibit an inverse relation. The data for the fertility of all couples are contained in the "total" columns (Tables 19-22). Only in the responses to the question about the type of job the husband and wife feel they could do in raising several children, is a direct relation to fer-

Table 19. Births per 100 couples by fertility-planning status by ratings of husbands and wives on chance for self-expression, the frequency with which things seem to go wrong for no reason at all, interviewer's rating on personal inadequacy, and inclination to worry.

MEASURE OF PERSONAL ADEQUACY*	FOR RATING OF WIFE					FOR RATING OF HUSBAND				
	FERTILITY RATES BY FERTILITY-PLANNING STATUS									
	Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility	Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility
ALL COUPLES	203	106	228	199	296	203	106	228	199	296
Chance for Self-Expression										
Excellent	186	127	227	192	248	199	127	244	204	283
Good	193	103	224	200	281	201	116	244	196	296
Fair	218	101	236	202	313	201	89	204	201	291
Poor or Very Poor	229	*	*	*	286	230	65	227	*	338
Things Go Wrong for No Reason At All										
Very Seldom	190	112	223	207	242	178	116	205	175	278
Seldom	191	118	235	195	294	182	111	229	201	255
Sometimes	209	99	214	196	314	210	96	233	205	304
Often	225	73	*	200	294	242	105	*	207	317
Very Often	248	*	242	218	303	283	*	*	205	387
Interviewer's Rating on Personal Inadequacy										
Self-Confident	196	129	220	199	296	211	143	215	212	318
Fairly Well-Satisfied	204	100	241	195	324	197	114	237	186	318
Average	202	97	195	212	280	208	78	247	214	285
Dissatisfied; Feels Inferior	206	101	256	188	295	201	65	204	189	276
Self-Rating on Inclination To Worry										
Very Little or Little	198	104	224	211	289	204	100	217	217	305
Somewhat Less Than Average	191	72	238	188	261	213	112	195	211	368
About Average	207	121	216	204	297	213	122	240	188	299
Somewhat More Than Average	179	93	231	192	247	172	96	232	180	239
Much or Very Much	223	104	241	192	330	205	98	*	200	275
Rating by Spouse on Inclination To Worry										
Very Little or Little	199	113	223	197	284	207	99	216	212	333
Somewhat Less Than Average	188	105	222	174	300	195	109	229	205	285
About Average	209	115	243	194	293	205	108	234	189	299
Somewhat More Than Average	195	100	230	212	280	194	127	*	198	264
Much or Very Much	213	83	206	222	336	202	87	216	208	255

*Rates not computed for base less than 20.

*See Appendix for exact wording of questions.

Table 20. Births per 100 couples by fertility-planning status by ratings of husbands and wives on tendency to get upset easily, confidence, and cheerfulness.

MEASURE OF PERSONAL ADEQUACY*	FOR RATING OF WIFE					FOR RATING OF HUSBAND				
	FERTILITY RATES BY FERTILITY-PLANNING STATUS									
	Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility	Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility
ALL COUPLES	203	106	228	199	296	203	106	228	199	296
<i>Self-Rating on Tendency to Get Upset Easily</i>										
Very Calm	205	*	*	205	*	205	110	*	222	320
Quite Calm	213	89	209	203	346	202	114	226	195	310
Ordinary	197	118	232	201	271	202	98	226	191	285
Easily	199	84	227	199	297	208	112	235	219	288
Very Easily	223	141	236	184	294	203	*	*	*	*
<i>Rating by Spouse on Tendency to Get Upset Easily</i>										
Very Calm	213	*	*	*	281	212	129	218	215	357
Quite Calm	204	121	247	195	296	199	94	222	188	295
Ordinary	198	111	224	192	287	201	106	235	210	294
Easily	207	90	226	198	318	201	105	*	179	269
Very Easily	210	94	*	233	298	214	*	*	*	265
<i>Self-Rating on Confidence</i>										
Very Much	206	93	210	224	391	212	109	225	205	322
Much	199	88	*	203	247	199	101	218	203	313
Somewhat More Than Average	179	78	246	187	300	178	100	246	178	260
About Average	211	119	218	204	303	213	110	230	204	298
Somewhat Less Than Average to Very Little	191	95	267	174	260	184	118	*	*	*
<i>Rating by Spouse on Confidence</i>										
Very Much	192	89	188	180	318	208	100	227	205	329
Much	184	91	204	210	281	193	104	258	194	266
Somewhat More Than Average	192	111	225	190	266	193	126	196	190	291
About Average	217	117	237	210	302	209	110	223	200	305
Somewhat Less Than Average to Very Little	200	106	*	173	300	192	*	*	214	243
<i>Rating by Spouse on Cheerfulness</i>										
Extremely or Very Cheerful	206	121	256	223	296	198	114	215	212	345
Rather Cheerful	191	96	224	173	285	194	97	221	201	294
Ordinary	213	108	219	214	292	211	110	239	191	293
Rather, Very, or Extremely Blue	205	100	*	188	383	220	*	*	189	265

*See Appendix for exact wording of questions.

*Rates not computed for base less than 20.

Table 21. Births per 100 couples by fertility-planning status by ratings of husbands and wives on feeling of cheerfulness, pep and energy, type of job couple could do in raising several children, and share of good breaks.

MEASURE OF PERSONAL ADEQUACY*	FOR RATING OF WIFE					FOR RATING OF HUSBAND				
	FERTILITY RATES BY FERTILITY-PLANNING STATUS									
	Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility	Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility
ALL COUPLES	203	106	228	199	296	203	106	228	199	296
<i>Self-Rating on Cheerfulness</i>										
Extremely or Very Cheerful	192	99	241	198	295	217	107	225	222	368
Rather Cheerful	194	112	216	204	275	196	117	231	194	285
Ordinary	218	112	229	200	308	205	98	216	196	288
Rather, Very, or Extremely Blue	177	65	•	167	•	185	67	•	•	226
<i>Self-Rating on Pep and Energy</i>										
Very Much	202	97	222	190	365	205	109	238	195	298
Much	189	90	•	212	283	196	92	•	218	331
Somewhat More Than Average	182	91	226	203	274	192	102	251	185	287
About Average	215	120	237	205	297	209	108	215	201	303
Somewhat Less Than Average, Little, or Very Little	193	105	222	162	293	197	125	•	210	235
<i>Rating by Spouse on Pep and Energy</i>										
Very Much	207	83	215	203	337	208	103	241	189	322
Much	201	117	204	216	282	187	81	208	209	265
Somewhat More Than Average	188	107	255	183	268	187	101	238	193	279
About Average	205	105	228	200	293	212	113	222	204	305
Somewhat Less Than Average, Little, or Very Little	216	118	234	204	343	201	118	•	168	283
<i>Type of Job Could Do in Raising Several Children</i>										
Excellent	214	112	214	277	•	208	116	213	206	309
Very Good	209	97	233	209	296	213	101	234	206	316
Good	202	111	235	195	302	196	112	225	203	282
Fair or Poor	198	104	215	183	283	199	93	245	181	287
<i>Share of Good Breaks</i>										
Definitely Yes	184	111	237	212	256	206	125	215	212	318
Probably Yes	197	108	231	197	284	194	106	233	191	284
Doubtful	225	96	196	189	313	210	74	226	210	297
Probably or Definitely No	256	•	•	207	371	240	•	230	203	321

*Rates not computed for base less than 20.

*See Appendix for exact wording of questions.

tility manifested (Table 21). This verifies the common-sense expectation that couples who believe that they could do an "excellent" job would have more children than those who as-

Table 22. Births per 100 couples by fertility-planning status by ratings of husbands and wives on difficulty making up mind, lucky in friends, and ratings of husbands on how lucky they are in the people for whom or with whom they have worked, and on the question of how good a manager he is.

MEASURE OF PERSONAL ADEQUACY*	FOR RATING OF WIFE					FOR RATING OF HUSBAND				
	FERTILITY RATES BY FERTILITY-PLANNING STATUS									
	Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility	Total	Number and Spacing Planned	Number Planned	Quasi- Planned	Excess Fertility
ALL COUPLES	203	106	228	199	296	203	106	228	199	296
Self-Rating on Difficulty Making Up Mind										
Very Seldom	188	107	219	203	271	202	108	228	196	296
Seldom	201	113	218	199	284	195	99	222	193	290
Sometimes	223	108	237	202	329	208	112	216	212	284
Often or Very Often	197	75	*	182	288	240	124	*	210	381
Rating by Spouse on Difficulty Making Up Mind										
Very Seldom	191	104	212	195	276	195	109	227	215	277
Seldom	198	98	239	198	281	203	114	218	187	291
Sometimes	219	130	230	208	305	218	91	247	199	334
Often or Very Often	226	97	*	194	407	209	93	*	181	278
Lucky in Friends										
Very Lucky	197	116	240	205	312	190	111	221	186	288
Rather Lucky	203	106	218	194	295	206	101	244	198	302
Neither Lucky nor Unlucky, Rather Unlucky, or Very Unlucky	212	87	227	201	288	210	107	208	215	294
Lucky in Employment										
Very Lucky						197	105	243	199	313
Rather Lucky						201	117	227	187	287
Neither Lucky nor Unlucky						218	95	210	237	292
Rather Unlucky or Very Unlucky						207	85	219	215	297
Kind of Manager										
Excellent or Very Good						209	113	*	185	321
Good						190	119	241	206	275
About Average						203	98	223	197	292
Below Average						238	115	*	217	334

*Rates not computed for base less than 20.

*See Appendix for exact wording of questions.

sumed a more negative position. Thus, as far as the fertility of all couples regardless of planning status is concerned, where a visible association can be observed it is of an inverse nature; fertility increases with lowering of personal adequacy.

The association of fertility to ratings on measures of personal adequacy presents an entirely different picture within the "number and spacing planned" group. The responses to the majority of questions for this planning group exhibit a positive relation of personal adequacy to fertility—as personal adequacy increases fertility tends also to increase. Again there are some questions that yield no relationship between personal adequacy and fertility and even among the others the direct relation is not usually exhibited with complete consistency. It is also recognized that the interclass differences in fertility rates are not always statistically significant. Because of the skewness of the responses toward high personal adequacy the fertility rates for the groups at the other extreme, in particular, are based upon numbers too small to yield reliability. This holds true despite the combinations of response categories that were made. With these several limitations, then, we may say that the latter part of the hypothesis ("The stronger the feeling of personal inadequacy . . . the smaller the planned families") is supported by the data for the "number and spacing planned" couples.

It is significant to note that the direct relation of fertility to adequacy is strongest for certain questions for which the relationship between fertility-planning status and adequacy was also very strong. These items are: chance for self-expression, the self-rating of wives on how frequently things go wrong for no reason at all, and the share of good breaks the couple felt they had received. High personal adequacy, therefore, is directly associated with effective planning and, moreover, even though successful contraceptive practice is inversely related to size of family generally, those couples who do rate themselves "adequate" and who claim successful planning have larger families than couples of similar fertility-planning status

who rate themselves "inadequate." Thus, with planning deficiencies eliminated as variables, those couples with a healthier personal adjustment are likely to be more motivated to have large families.²⁸ As indicated above, Kiser and Whelpton previously demonstrated a similar association to exist for socio-economic status. Socio-economic status, although generally inversely related to the fertility of "all couples,"²⁹ is directly related to the fertility of the planned families.

On the other hand, items in which the association with fertility-planning status was weak also maintain an irregular and inconsistent relation to fertility. Such items are the "pep and energy" rating scale, ratings on self-confidence, inclination to worry, and tendency to get upset easily. The responses to the questions on amount of pep and energy even suggest an inverse relationship with the fertility rates of the "number and spacing planned" families. Herrera and Kiser³⁰ report traces of this inverse relation for the self-rating of the couple and the rating of the spouse, but a *direct* relation of the interviewer's rating on "pep and energy" (not included in the present analysis) to fertility of the "number and spacing planned" couples. In the face of this seeming contradiction, it is difficult to judge just what the actual, if any, relationship is. It is possible that the interviewer, in rating the couple on this trait, was influenced by the number of children the couple actually had. A home with several children may produce an effect of bustling ac-

²⁸ The position of cause and effect is again empirically an "imponderable." Theoretically, it would appear that feeling of personal adequacy and satisfactory adjustment are reflections of personality traits which are well structured by the time of marriage, although obviously one's personality is never a static entity. Certainly, factors of marital adjustment are involved.

See Reed, Robert B.: Social and Psychological Factors Affecting Fertility. vii. The Interrelationship of Marital Adjustment, Fertility Control, and Size of Family. The Milbank Memorial Fund *Quarterly*, October, 1947, xxv, No. 4, p. 383-425 (Reprint pp. 259-301).

²⁹ More exactly, the association for "all couples" takes the form of an oblique "J" curve with the inverse trend stopping at the "20-29" socio-economic level. Above this level, the trend takes the form of a direct relation.

See Kiser and Whelpton, *op. cit.* ix. Fertility Planning and Fertility Rates by Socio-Economic Status. P. 238 (Reprint p. 409).

³⁰ Herrera and Kiser, *op. cit.* xiii. Fertility in Relation to Fertility Planning and Health of Wife, Husband and Children. Pp. 399-401 (Reprint pp. 599-601).

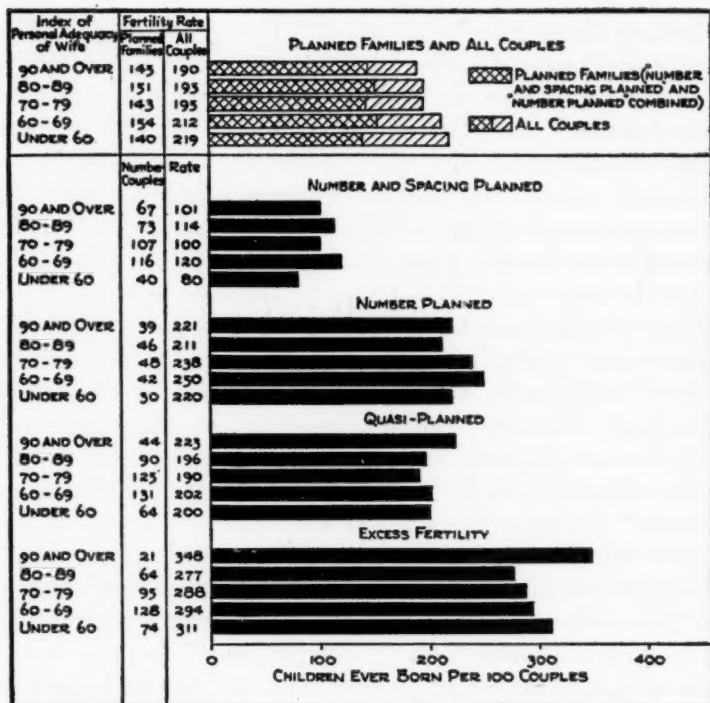


Fig. 3. Number of children ever born per 100 couples, by fertility-planning status and rating of the wife on the index of personal adequacy.

tivity. On the other hand, the constant demands of children on the energy of their parents (particularly the mother) may produce a feeling of inadequacy.

Since a large percentage (31) of the "number and spacing planned" group is composed of childless couples, the question naturally arises as to whether the direct relation between adequacy and fertility can be explained in terms of this select group. Although they are not presented here, fertility rates computed for the fertile couples alone in this planning category, indicated, with some minor exceptions, a persistence of the direct relation. Consequently, we cannot say that the childless couples alone are responsible for the confirmation of the

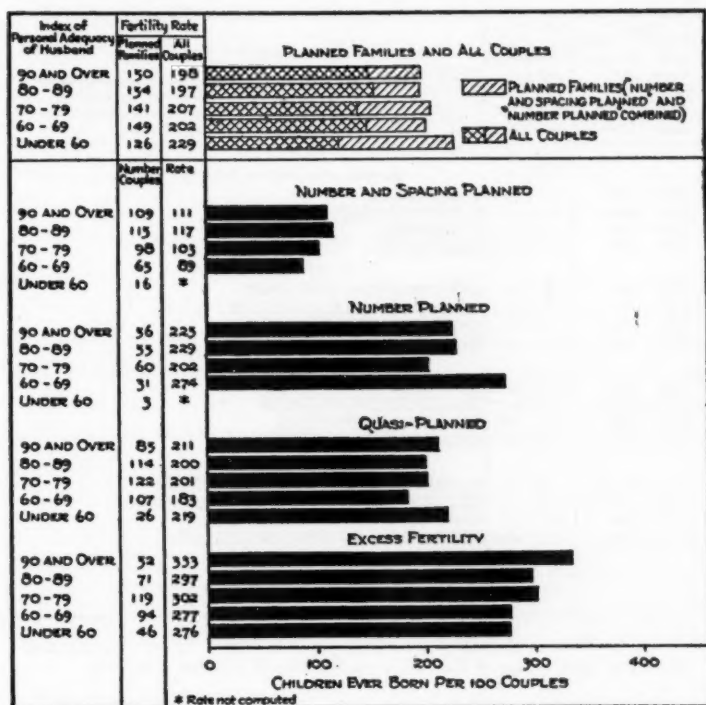


Fig. 4. Number of children ever born per 100 couples, by fertility-planning status and rating of the husband on the index of personal adequacy.

hypothesis. It is true, however, that the "number and spacing planned" couples are responsible for bearing out this part of the hypothesis. The persistence of a direct relation of fertility to adequacy for all "planned families" (i.e., the "number and spacing planned" and "number planned" groups combined) occurs only because of the greater number of couples in the former group. The relation is very irregular within the "number planned" category alone.

The situation may be summarized by reference to Figures 3-5 where fertility rates are presented by planning status and by the summary indices of personal adequacy for husbands, wives, and couples. For the sample as a whole (top sections of

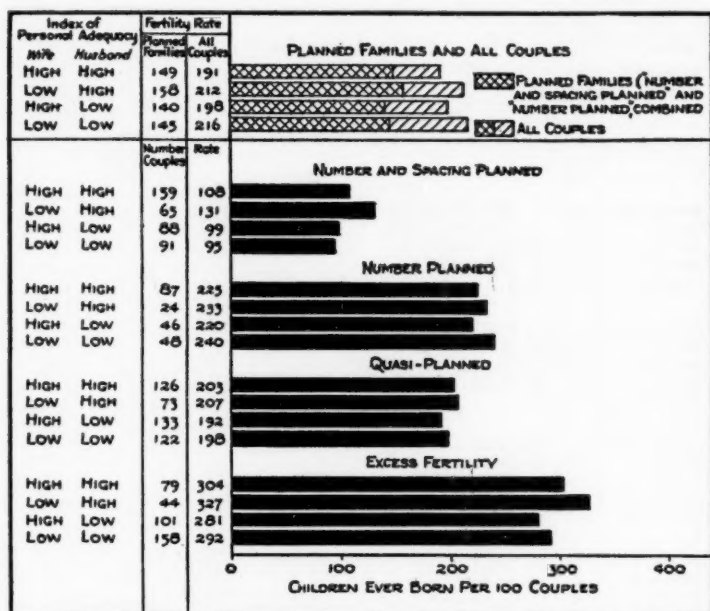


Fig. 5. Number of children ever born per 100 couples by fertility-planning status and joint rating of the couple on the index of personal adequacy.

the charts) there is clearly an inverse relation of fertility to adequacy. The range of the variation is not wide, but the rates are relatively consistent for the intermediate classes on the personal adequacy scale, especially for the wives.

When each spouse is considered separately, the *direct* relation of fertility to adequacy among the "number and spacing planned" couples is more striking for husbands than for wives. (Cf. Figures 3 and 4.) The irregularities are understandable when we realize that the responses to the individual questions themselves, which make up these summary indices, did not present consistent patterns of positive association with fertility. This fact has several possible interpretations. It may be that some of the items retained were not valid measures of personal adequacy despite the various methodological precautions. It is also possible that "personal adequacy" is not a

unidimensional attribute. And, of course, there is always the possibility that fertility is simply not independently and consistently related to adequacy. This possibility is strongly suggested, for example, in cross-tabulations presenting fertility rates of planned families by "personal adequacy—economic security" combinations. The rates in Table 23 show the greater relative importance of economic security than personal adequacy in relation to the size of planned families.

It will be recalled that just the *opposite* pattern prevailed with respect to fertility planning, i.e., feeling of personal adequacy and effective fertility planning were directly related within each economic security classification, but the otherwise direct relation of economic security to fertility planning was considerably weakened when personal adequacy was held constant.

When the combined index for the couple is considered, the picture of fertility rates in the "number and spacing planned" group is similar to that encountered when the relation of adequacy to planning status itself was discussed. (Figure 5.) The highest fertility rate (131) is exhibited by the "wife low—hus-

Table 23. Fertility rates of planned families by index of personal adequacy and index of economic security jointly considered for each spouse.¹

INDEX OF PERSONAL ADEQUACY	INDEX OF ECONOMIC SECURITY					
	Wife			Husband		
	High	Medium	Low	High	Medium	Low
FERTILITY RATES						
High	172	138	110	161	160	107
Medium	166	132	118	149	159	104
Low	169	147	143	180	121	145
NUMBER OF COUPLES						
High	101	85	39	155	123	57
Medium	64	57	34	45	68	45
Low	51	81	96	30	43	42

¹See footnote to Table 17 for meaning of high, medium, and low categories.

band high" class, again suggesting the greater importance of the personality and role of the husband in the combination of effective planning and larger families. This class manifests the highest fertility rates within each planning category except the "number planned" where it falls to second position. Within the "number and spacing planned" group, the other combinations assume a direct relation to fertility.

Feeling of personal adequacy, as measured by the various questions used in this analysis, thus would appear to be a generalized personality status which reflects not only reaction to economic circumstances but adjustment to many varieties of noneconomic interpersonal relations as well. Success in fertility planning thus would seem to be more dependent upon the pres-

Table 24. Fertility rates among all couples and planned families by socio-economic status of the couple and index of personal adequacy of the wife and husband.

INDEX OF PERSONAL ADEQUACY	ALL COUPLES				PLANNED FAMILIES			
	Number of Couples		Fertility Rate		Number of Couples		Fertility Rate	
	Wife	Husband	Wife	Husband	Wife	Husband	Wife	Husband
INDEX HIGH SOCIO-ECONOMIC STATUS (UNDER 20)								
90 and Over	45	67	187	175	28	49	168	161
80-89	57	83	160	169	42	52	155	167
70-79	54	40	167	163	38	23	179	148
60-69	50	32	160	187	30	18	160	*
Under 60	18	2	*	*	4	—	*	—
INDEX MEDIUM SOCIO-ECONOMIC STATUS (20-39)								
90 and Over	73	137	155	180	50	72	120	136
80-89	122	143	185	171	50	74	162	142
70-79	168	171	162	171	76	75	118	125
60-69	130	84	192	155	55	38	135	113
Under 60	73	31	149	184	33	5	112	*
INDEX LOW SOCIO-ECONOMIC STATUS (40 AND OVER)								
90 and Over	53	98	242	241	28	44	168	159
80-89	94	129	230	245	27	44	126	157
70-79	153	188	243	250	41	60	154	157
60-69	237	181	235	226	73	40	167	160
Under 60	117	58	263	257	33	14	161	*

*Rate not computed for base less than 20.

ence of the emotionally stable, self-confident, well-satisfied, rationalistic personality than the more narrowly circumscribed confidence that accompanies a feeling of economic security. On the other hand, the actual number of children decided upon by husbands and wives who effectively plan family size is related much more to feeling of economic security than to personal adequacy. In other words, successful *planning* of fertility is more related to personal adequacy than to economic security; the direct relationship persists with economic security controlled. In contrast, the actual *fertility* of planned families is more related to economic security than to personal adequacy; the direct relationship persists with personal adequacy controlled.

No systematic relation of fertility to index of personal adequacy of either the wife or husband is found when the factor of socio-economic status is held constant. This holds true for "all couples" and for the "planned families" considered separately (Table 24). These various problems militate against any definitive or conclusive statement about the relation of fertility to feeling of personal adequacy.

SUMMARY

The hypothesis considered in this report was: "The stronger the feeling of personal inadequacy, the higher the proportion of couples practicing contraception effectively and the smaller the planned families." Feeling of personal adequacy was measured by multiple-choice questions and summary indices which were constructed from the responses. The data clearly contradict the first part of the hypothesis. Instead, a rather consistent *direct* relation of *adequacy* to fertility planning was found, although not all of the responses to individual questions presented equally positive associations. With socio-economic status controlled, the direct relationship persists but it is weakened. We interpreted this to suggest that fertility planning, although somewhat independently related to feeling of adequacy, is more strongly associated with the complex of variables reflected only in shadow form by the index of socio-economic status.

The data on the fertility of planned families tend to support the latter part of the hypothesis. It was emphasized that this direct relationship is only slightly suggested and is, by no means, conclusively determined. With respect to both variables—fertility planning and fertility—the measures of personal adequacy possess only a very low predictive sensitivity.

APPENDIX

METHODOLOGY

Validity and Reliability are the primary problems involved in the use of questionnaires designed to measure a given psychological complex. In short, do the questions measure what they purport to measure (in this case "feeling of personal inadequacy") and do they elicit consistent responses? Neither of these problems was dealt with adequately in the original formulation of the questionnaire. The pretesting of the schedules that did occur was done mainly for the purpose of eliminating irrelevant questions and changing those that were ambiguous, too difficult, poorly worded, and so forth. The limited attention given to the criteria of validity and reliability consisted in general appraisals of various questions in the light of any previous use of them and subsequently on the basis of the field trials mentioned above.³¹ In so far as validity itself is concerned, this procedure was not much less sophisticated than many of the modern efforts at validating personality inventories. It must, of course, be recognized that since 1938, when the Indianapolis Study was initiated, considerable advances have been made in psychological measurement. In addition, the substantive interest in the Study was more largely socio-demographic than psychological. Nevertheless, this does not obviate the necessity for refining the tools of analysis used in the measurement of variables hypothetically related to fertility and fertility planning.

³¹ The psychologists on the Committee combed the literature such as the studies of marital happiness for reports on previous use of questions in the Study. Dr. E. Lowell Kelly prepared for the Committee special tabulations from his longitudinal study of married couples recruited from announcements of engagements and marriages (Kelly's study was interrupted by his entrance into military service and it has not been completed). In addition, Dr. John C. Flanagan made available to the Committee the preliminary results of his study of Army aviators. See Flanagan, John C.: *A Study of Factors Determining Family Size in a Selected Professional Group. Genetic Psychology Monographs*, 1942, xxv, pp. 3-99.

As previously indicated, the Committee developed and used thirty-five questions (including the interviewer's rating) to test the personal inadequacy hypothesis. These are presented in the following pages. What followed may be described methodologically as a sort of "post factum" validation. The field work, it will be recalled, was carried out in 1941.

The problem of validity, in this case, was further complicated by the vagueness of the term "personal inadequacy." A brief survey of personality inventories and psychological literature revealed that the term was not in standard use either in psychiatric diagnosis, conceptual classification, or textual description. The ideal procedure might have been to submit this group of questions both to a sample of people diagnosed by psychiatrists as "personally inadequate" and to a sample of a "normal" population, and thus empirically determine their capacity to differentiate between the two groups. However, both the unconventionality of the classification and the neurotic rather than psychotic nature of the complex rendered this alternative impossible. Even if it had been feasible, the difficulty involved in the variation of psychiatrists' diagnoses would still have been a factor not easily overcome.³²

The same lack of success resulted from attempts to locate similar questions in already validated tests. Not only was "personal inadequacy" rare in occurrence as a category,³³ but even when the inquiry was extended to include such associated classifications as "psychological inadequacy," "inferiority complex," "emotional stability," and others which did appear more regularly, only a few questions were discovered which were very similar in content or wording.

The procedure finally decided upon was to submit the questions to a group of practicing psychiatrists for their evaluation. Twelve psychiatrists in Philadelphia were contacted in 1950 and they agreed to cooperate.³⁴ The advantages of this procedure are definitely limited. Variations in the subjective definitions of personal inadequacy are still a problem. Also, the probable inexperience of many psychiatrists with objective tests possibly introduces an additional

³² For some interesting examples of this, see Stouffer, Samuel A., *et al.*: *MEASUREMENT AND PREDICTION. Studies in Social Psychology in World War II*, Vol. iv. Princeton, Princeton University Press, 1950, Chapters 13-14.

³³ Of the inventories surveyed, the closest category discovered was "Feelings of Inadequacy" in "Mental Health Analysis"—Adult Series, Form A (devised by Louis P. Thorpe and Willis W. Clark with Ernest W. Tiegs, Consultant).

³⁴ These psychiatrists are of the so-called "psychoanalytically oriented" school.

limitation. Nevertheless, the procedure does have the decided advantage of supplementing the Committee's original selection with the opinion of the "expert."

The items submitted consisted of the following:³⁵

(a) the original set of thirty-five questions reduced to 12 core items, i.e., including only the one central question in each instance instead of all the possible combinations of the same question asked of the husband, of the wife, and of one about the other, etc. There are:

1. Have you been lucky or unlucky in the people for whom or with whom you have worked?
2. Have you been lucky or unlucky in the friends you have made?
3. How often is it difficult for you to make up your mind about the things that have to be done day by day?
4. Do you get upset easily?
5. How much confidence do you have in yourself?
6. Aside from financial matters, how good a job do you think you and your wife could do in bringing up several children?
7. How much are you inclined to worry?
8. On the whole, how good a chance do you have to express yourself and show what you are worth either in your work (homemaking) or in your other (outside) interests?
9. On the whole, have you had your share of good breaks?
10. How often has everything seemed to go wrong without any reason at all?
11. How much energy and pep do you ordinarily have?
12. Do you usually feel cheerful and look on the bright side of things?

(b) an additional set of sixteen core items selected from other questions on the schedules on the basis of their possible relation to the concept of personal inadequacy. These are:

13. Are you a good manager?
14. Aside from money worries, did your parents have much trouble in bringing up their children, for example, health, children getting into trouble, etc.?
15. How happy was your childhood on the whole?
16. How much has the fear or dread of pregnancy and child-birth discouraged you from having more children?
17. How much would (has) it bother(ed) you to be tied down by (your) children?

³⁵ The multiple-choice responses were not included specifically but the form letter attached mentioned the type of answers provided for. All of these questions had from five to eight multiple choices.

18. How much do you think having children helps keep a marriage from breaking up?

19. When the going gets tough, is one of your greatest comforts thinking of how much your children love and need you?

20. How happy were your parents in their family life?

21. How much did a feeling that children bring husband and wife together encourage you to have your last child?

22. If you had your life to live over, do you think you would marry the same person; a different person; or, not marry at all?

23. After your first child was born did you often think how much comfort a second child would be if the first one died?

24. Everything considered, how happy has your marriage been?

25. Is one of your greatest satisfactions in being a parent knowing that after you are gone, some part of you will live on in your children?

26. How much have you been interested in religion since marriage—when you were 10 to 15 years old?—

27. Do you feel that it is fine to be able to live over again in the lives of your children?

28. Do parents have the right to expect that their children will appreciate the sacrifices parents make for them?

In the form letter attached, the psychiatrists were requested to indicate by number whether they considered the question "very relevant" (a rating of 1); "relevant, but not very important" (a rating of 2); or, "irrelevant" (a rating of 3) to the concept of "personal inadequacy."

Results. The evaluations of the psychiatrists represented an almost complete endorsement of the Committee's originally designated questions. When all the evaluated questions were ranked, the best fifteen items included ten of the total twelve original items. The two items not included in this group are—"Have you been lucky or unlucky in the friends you have made?" and "Have you been lucky or unlucky in the people for whom or with whom you have worked?"—which ranked 7th and 8th from the bottom respectively. As might be expected, no question averaged worse than 2.0 ("relevant, but not very important"). The mean evaluation for all items was 1.6. The average of the ratings for the items to be excluded was 1.8; for the items to be retained, 1.5, indicating some relative improvement.

In accord with these evaluations, the following fifteen items were included on the punch card (they are listed here in descending order of validity rank; the numbers preceding the average evaluation refer

to lists of questions above): No. 3 had a mean evaluation of 1.0; Nos. 5 and 6, a mean evaluation of 1.4; Nos. 7, 8, 9, 10, 13, 14, and 17, a mean evaluation of 1.5; Nos. 15 and 16, a mean evaluation of 1.6; and Nos. 11 and 12 had a mean evaluation of 1.7. The two items referred to above (lucky in friends and in employment) which ranked relatively low in the estimation of the psychiatrists, were also included on the punch card in order to give complete coverage to the Committee's questions. They were not included in the summary indices which were later constructed. The Interviewer's Rating Scale, which was not submitted to the psychiatrists, was retained and included in the summary indices.

Item Analysis. Since the evaluations of the psychiatrists only roughly established levels of relative validity for a large group of items and provided the basis only for their tentative acceptance for inclusion in an index, it was necessary to check their judgments against the internal consistency of the responses to the questions. The procedure adopted was not intended as a test of reliability. The conventional methods of measuring reliability (the test-retest, split-half, and odd-even item methods) were not applicable under the circumstances.³⁶ A statistical evaluation of the internal consistency of items is not a test for reliability,³⁷ although it is occasionally interpreted as such. Using the upper and lower groups of the distribution (the technique used here and described below) which is one form of item analysis, actually comes closer to an analysis of validity than reliability. In the absence of an external criterion, the total score is substituted with the assumption that the score on all the questions is a more valid index than the scores on individual questions. This type of analysis, thus, seeks only to refine the validity of the indices to be derived.

The problem was met in the following manner. After adjusting for coding, all forty-nine scores for each of the 860 couples (the uninflated sample) were simply added. No differential weights were assigned. The scores derived were those for couples.

The highest possible score, hypothetically representing the most "adequate" was 437; the highest observed score was 401. The lowest possible score, or hypothetically the most "inadequate" was 49; the

³⁶ The odd-even item method was the most feasible one of the three, but the small number of questions prohibited its use.

³⁷ For discussion, cf. Sletto, R. F.: CONSTRUCTION OF PERSONALITY SCALES BY CRITERIA OF INTERNAL CONSISTENCY, Hanover, N. H., Sociological Press, 1937.

lowest observed score was 174. The hypothetical average score, i.e., that score in a "neutral" position with respect to the adequacy-inadequacy continuum was 235—the mean of the actual distribution of scores was 293. The distribution was thus very definitely skewed in the direction of feelings of adequacy.

The next step was to select from the sample those cards above the 90th percentile (which we shall subsequently refer to as Group A) and these below the 10th percentile (which we shall designate Group I). Group A consisted of that 10 per cent of the sample expressing the strongest feeling of *adequacy* and Group I, conversely, refers to that 10 per cent of the sample expressing the strongest feeling of *inadequacy*. These cards were then run on all questions, separately for husband and wife, and distributions by responses were plotted for each. The logical premise of this procedure is that any question on which Group A cards exhibit a preponderance of scores below the average or on which Group I cards exhibit a preponderance of scores above the average, is not measuring the same thing as the entire battery of questions. We are concerned here with ascertaining which questions are not consistent parts of the general constellation that we term "personal inadequacy." This method does not tell us which questions actually measure this psychological phenomenon, but only whether particular questions are correlated positively with the total score that we assume, for operational purposes, to be a valid criterion. Thus its function here is to act as a retest of the opinions of the psychiatrists and to refine further the battery of items.

Results. Group A exhibited no instance of the distribution on any question having a greater frequency below than above average. With reference to Group I, however, the most "inadequate" 10 per cent of the couples indicated feelings of above-average adequacy in responses to twenty-one out of the forty-nine questions. These questions are thus inconsistent on the basis of the above criteria. To reiterate: the level of discrimination employed was the midpoint, or neutral position, of the response-scale. To illustrate: as indicated above, one of the items ranking low in the estimation of the psychiatrists was—"Have you been lucky or unlucky in the friends you have made?" Five possible responses were provided—very unlucky, rather unlucky, neither lucky nor unlucky, rather lucky, very lucky. Among the wives in Group I, only 7 per cent scored in the "very unlucky" and "rather unlucky" categories combined, while 56 per cent appeared in

the "rather lucky" and "very lucky" categories. Since this group presumably is composed of women with strongest feeling of inadequacy, it is rather evident that this particular question is not discriminatory. Consequently, it was excluded from the index. Twenty other questions were similarly disqualified, leaving twenty-eight questions for inclusion in the index. These are evenly distributed: fourteen asked of or about the wife, and fourteen of or about the husband. Of these twenty-eight questions, listed in footnote 6 of the text twenty-seven are from the Committee's original list of thirty-seven, and one is from the additional set of twelve questions.

Relation of Psychiatrists' Ratings to Test of Internal Consistency. To determine this relationship, it was necessary to derive rank orders for the items that were: (a) evaluated by the psychiatrists and finally included on the punch card (referred to as Group P); (b) tested for internal consistency in Group I; and (c) evaluated for internal consistency in Group A. With the Interviewer's Rating Scale again excluded from consideration, each of these rank orders contained seventeen items. Coefficients of rank-order correlation were then computed. The correlation between the psychiatrists' evaluations (Group P) and items tested in Group I was +.46. Thus, items

Table 25. Percentage of identical agreement, identical and approximate agreement,¹ and no agreement between the wife's self-rating and the husband's rating of the wife and between the husband's self-rating and by the wife's rating of the husband.

Item ²	WIFE'S SELF-RATING AND HUSBAND'S RATING OF WIFE			HUSBAND'S SELF-RATING AND WIFE'S RATING OF HUSBAND		
	PER CENT AGREEMENT			PER CENT AGREEMENT		
	Identical	Identical and Approximate	None	Identical	Identical and Approximate	None
Difficulty Making Up Mind	31.3	77.2	22.8	32.9	79.3	20.7
Get Upset Easily	33.9	82.0	17.9	33.6	81.9	18.1
Self-Confidence	42.4	71.5	28.5	48.6	75.6	24.3
Inclination to Worry	33.1	66.7	33.2	38.1	68.8	31.2
Kind of Manager	38.1	81.8	18.1	43.8	83.7	16.3
Pep and Energy	43.3	75.3	24.6	41.7	77.3	22.7
Cheerfulness	39.4	86.7	13.3	39.9	87.3	12.7
Mean Percentage	37.4	77.3	22.6	39.8	79.1	20.9

¹"Identical and approximate agreement" includes identical agreement plus one scale point removed in both directions. The percentage of "identical and approximate agreement" plus the percentage of "no agreement" equals 100 per cent.

²The multiple-choice questions having more than five-point intervals on the response-scale were converted to five points for purposes of this tabulation. Four of these items were originally on six-point scales and one item was on a seven-point scale.

that ranked high in one group as measures of inadequacy also tended to rank high in the other group. The correlation between items ranked in Group P, and those in Group A was $-.49$. In other words, the items rated high by psychiatrists are those capable of differentiating between adequacy and inadequacy. This is even further borne out in the correlation between the rank order of items in Group I and those in Group A, which was $-.77$. The net effect, therefore, of this entire process of refinement has been basically to improve the prospective index with reference to the capacity of questions to discriminate between adequacy and inadequacy.

Intercorrelation of Selected Items. An additional partial check on the validity of some questions was possible. Fourteen of the questions under consideration were accompanied by identical questions asking the husband and wife to rate their spouse on the same trait on which they had rated themselves. These fourteen questions (actually only seven items in that the same question was asked of husband and wife) are those listed in Table 25. For example, the question "Do you get upset easily?" was asked of each wife and husband. The question "Does your wife (husband) get upset easily?" was also asked of both separately. The responses to these pairs of questions were then correlated.²⁸ Each percentage is based on a total of 860 couples which is the original, uninflated sample.

It is evident from this list that the relationships between self-ratings and ratings of the spouse are relatively low and certainly fall far short of a desired high confidence level with reference to validity.

In an attempt to explore some of the possible reasons for this apparent lack of agreement, some additional tabulations were made. It is necessary, first of all, to consider the actual distribution of responses to these types of questions. These data, which are assembled in Table 26 in the form of summary mean distributions of responses for all seven items, exhibit the following patterns when the various comparisons are made:²⁹

1. The self-ratings of husbands are significantly higher than the self-ratings of wives. Although the actual pattern of relationship for each individual item is not included in this paper

²⁸ Originally, intercorrelations were prepared by the conventional Pearsonian technique. However, in view of the usual vagueness surrounding the interpretation of these coefficients and because the data lent themselves so readily to percentage analysis it was decided to use percentages of agreement.

²⁹ Similar comparisons of frequency distributions for these types of self-ratings (Continued on page 294)

AVERAGE RATING OF SEVEN QUESTIONS	TYPE OF QUESTION			
	Wives' Self-Ratings	Wives' Ratings of Husbands	Husbands' Self-Ratings	Husbands' Ratings of Wives
TOTAL	100.0	100.0	100.0	100.0
Very High	16.9	25.7	22.3	20.5
High	20.8	24.0	26.0	25.1
Neutral	46.5	40.3	41.7	39.5
Low	9.4	6.4	6.7	10.0
Very Low	6.4	3.6	3.4	4.9

Table 26. Percentage distribution of average rating of responses to seven questions, by type of question.

(Table 26 only summarizes average frequencies for all seven items), the higher self-ratings of husbands are found for all traits except "kind of manager."

2. Husbands rate wives slightly higher, on the average, than wives rate themselves. This is consistent for all of the seven personality traits in question.

3. There is no appreciable difference between the distributions of husbands' self-ratings and wives' ratings of husbands.

4. Wives rate their husbands significantly higher, on the average, than wives rate themselves. This is consistent for all items.

5. Husbands rate themselves higher, on the average, than they rate their wives on all traits except "kind of manager."

6. On all traits except "kind of manager" the wives' ratings of husbands are higher, on the average, than the husbands' ratings of wives.

In view of the above findings husbands would seem to have the dominant images of themselves and their self-images appear to be accepted to a considerable extent by the wives. Conversely, wives' self-images are much more modest even than the husbands' opinions of their wives' personalities. This whole pattern is completely reversed on the question concerning the kind of manager the respondent believes himself to be, i.e., wives rate themselves and are rated by husbands significantly higher than husbands rate themselves and are rated by wives. It may very well be that the perceptual frame of reference on the subject of management is more concrete and real for the wives, in terms of the domestic scene, than it is for the husbands.

and spouse ratings on personality traits were made by E. Lowell Kelly in "Marital Compatibility as Related to Personality Traits of Husbands and Wives as Rated by Self and Spouse." *Journal of Social Psychology*, 13, 1941, pp. 193-198. Most of his observations, which are based on the mail-questionnaire replies of a rather heterogeneous group of seventy-six couples, do not coincide with ours.

In the light of these comparisons, perhaps part of the reason for the observed low agreements discussed above (Table 25), may be that the questions elicited different perceptual frames of reference for the wives and the husbands. Additional interpretations are afforded in Table 27. The average relationship between self-ratings of wives and self-ratings of husbands is the lowest of all (only 34 per cent identical agreement). A low relationship would be expected here (but a positive one, since the married couples have lived together 12 to 15 years), because two different people rated themselves independently.

The average percentages of identical agreement between self-rating and rating of self by the spouse on the same item are also relatively low, 37 per cent and 40 per cent identical agreement, respectively. One might expect the agreement to be higher in view of the fact that two people are rating the same person. Perhaps the results should be interpreted as a lack of agreement between two persons' perceptual images of one person. To the extent that this is true they afford no test of validation of either the self-ratings or the ratings by the spouse, since we have no external criterion for deciding which is the "correct" perception. It may be that questions of this type throw light on the way people rate each other in relation to the way they rate themselves but do not provide trustworthy information about individual personalities.

The last two pairs of interrelations in Table 27 are the most enlightening. When the interrelationships of wives' ratings of selves and their ratings of husbands and husband's ratings of selves and

Table 27. Average¹ percentage of identical agreement, identical and approximate agreement, and no agreement between self-ratings, between self-ratings and ratings by spouse, and between self-ratings and ratings of spouse.

TYPE OF INTERRELATED RATING	PER CENT AGREEMENT		
	Identical	Identical and Approximate	None
Wife (Self)—Husband (Self)	34.4	70.3	29.7
Wife (Self)—Husband (Wife)	37.4	77.3	22.6
Husband (Self)—Wife (Husband)	39.8	79.1	20.9
Wife (Self)—Wife (Husband)	52.4	78.5	21.5
Husband (Self)—Husband (Wife)	52.6	80.4	19.6

¹These are mean percentages representing the averages for the seven items, shown in Table 25. For instance, the second line shows the extent of agreement between wife's rating of herself and husband's rating of the wife on the same items.

their ratings of wives are considered there is a significantly high amount of agreement. (52 per cent and 53 per cent identical agreement, respectively.) In other words, when the perceiver or *rater* is constant and the stimulus or *ratee* is different the agreement is strongest. This suggests the possibility of a transfer of self-image, i.e., an inability to divorce one's own personality from the rating of one's spouse. Involved here may be a kind of mental or perceptual "laziness" on the part of the respondent who rates himself on a given personality trait and then immediately rates his spouse on the same trait. Unfortunately for comparative purposes the self-rating questions always preceded the spouse-rating question in the interview schedule. It seems highly likely that as a result the perceptual frame of reference already established is difficult to "break." However, some evidence that this type of agreement reflects a happy marriage, i.e., that one sees one's self in one's spouse if there is high compatibility is contained in a recent study.⁴⁰ It would seem definitely to suggest the relative strength of the perceptual reference over the stimulus.

Construction of Summary Indices of Personal Adequacy. The original plan to construct an index of personal adequacy for the couple by adding the individual scores of the husband and wife was abandoned. This procedure would result in "average" scores for couples with an extremely "adequate" husband and an extremely "inadequate" wife, and *vice versa*. Although this would affect only a minority of cases, it was nevertheless considered inadvisable in view of its sociological unrealism. Instead, it was decided to construct separate indices for the husband and wife and to combine these into a joint index for the couple. As previously described, the index for each spouse was derived simply by adding the fourteen rating scores. The hypothetical and actual limits of these distributions are described in the text.

The levels of adequacy are presented as numerical intervals and are to be regarded as relative rather than absolute scales. It would

⁴⁰ Preston, Malcolm G.; Mudd, Emily Hartshorne; Peltz, William L.; and Froscher, Hazel B.: Impressions of Personality as a Function of Marital Conflict. *Journal of Abnormal and Social Psychology*, Vol. 47, No. 2, April, 1952. These authors conclude that their similar results are "a direct consequence of the fact that people on the opposite side of a conflict situation have more opportunities to take note of their opponent as different rather than similar to themselves, whereas personalities with strong affective feelings (such as love) promoting a wish of identification, tend to see their partners as similar rather than dissimilar to themselves."

be highly presumptuous to identify these points on a scale in terms of absolute concepts of adequacy or inadequacy, since a definition of a cutting score is meaningless without an external criterion of validity. Also, it must be kept in mind that these indices reflect a self-expressed, subjective *feeling* of personal adequacy.

Evaluation. The various attempted checks on the validity of the items used in this analysis have been described in some detail. The technique of utilizing the judgments of psychiatrists for validating questionnaires is not orthodox procedure and is at best only a very rough check. The tests of internal consistency revealed a large number of items to be deficient with respect to the criteria established. And finally, the correlation of selected items involving self-ratings and ratings of the spouse indicated relatively low relationships. As explained above, tests of reliability were impossible under the circumstances. These methodological limitations, therefore, preclude conclusive interpretations of the relationships between "personal adequacy" and the variables discussed.

ANNOTATIONS

RESEARCH METHODS IN SOCIAL RELATIONS¹

THIS book is an excellent summary of the main steps involved in social research. It is most useful as an overview of the interrelated series of problems encountered in conceiving and carrying through a program of social research. It describes most clearly how particular research steps or techniques fit into the larger pattern of a research design. The reviewer has found this book to be a useful text in a course in field methods in which social science students have been involved in carrying through a complete social research project.

The book is not a manual on how to solve the detailed problems encountered in various kinds of social research. With the rapid development of social science methodology this would require an encyclopedia. What this book does is to introduce the student to the major problems encountered in each part of the research process and the directions in which solutions may go. It provides a systematic general orientation from which students or practitioners can then proceed to a more intensive examination of technical problems from other sources.

The two volumes of the book are organized along different principles. The first volume by Jahoda, Deutsch, and Cook is a largely self-sufficient account of the research process, covering such topics as selection and formulation of a research problem, research design, data collection methods, analysis and interpretation. As a self-contained unit the major gap in this volume is the area of sampling. However, this topic is covered in Volume Two.

¹ Jahoda, Marie; Deutsch, Morton; and Cook, Stuart: *RESEARCH METHODS IN SOCIAL RELATIONS: WITH ESPECIAL REFERENCE TO PREJUDICE. PART ONE: BASIC PROCESSES. PART TWO: SELECTED TECHNIQUES.* Edited by Marie Jahoda, Morton Deutsch and Stuart W. Cook. New York, The Dryden Press, 1951. x + 759 pp. \$6.00 (\$3.75 per volume).

The second volume contains more intensive and technical treatments of research problems covered to a greater or less extent in Volume One. Volume Two consists of a series of separate contributions by specialists in such fields as sampling, interviewing, observational field work, etc. While all of these essays are valuable, the intensity of treatment and the nature of coverage is quite uneven, probably a resultant of the multiplicity of authors. Leon Festinger's chapter on "Assumptions Underlying the Use of Statistical Techniques" is an excellent, albeit over-brief, discussion of issues that are basic but frequently overlooked in training social researchers.

While the book will be useful for the social sciences in general, it emphasizes particularly research methods and materials in the field of social psychology. This is not surprising, since the book was originally designed to deal exclusively with methods of research in intergroup relations. The social-psychological emphasis is apparent in the scanty treatment given to census materials, vital statistics, and agency records as a source of research data. This is a statement of limitation rather than criticism, since some principle of selection is necessary for a work of this type.

The book places considerable emphasis on the role of the researcher in designing, interpreting, and applying social research for action purposes. A separate chapter deals with "Presentation and Application of Social Research." The reviewer considers this broader treatment of the role of the researcher a desirable trend in view of the realities of social research today. A necessary part of this emphasis is a consideration of the role of the researcher's own values in social research. In this connection, the authors repeat a view that is becoming common: that "Since . . . personal values inevitably influence the choice of topic, the only means by which the rationality of scientific procedure is maintained is the awareness of where and how they enter."

This reviewer has seen no sound evidence that the researcher who makes his own values explicit will necessarily do a better research job. The researcher's task of self-analysis is far more complicated than such statements imply. Further, the reviewer would prefer to emphasize outside tests of validity and re-

liability of research results rather than examining the researcher's motivation.

Some recent experience in studying industrial populations places in doubt the generality of the conclusion (Ch. 6) that as compared with the questionnaire the interview is "... the more appropriate technique for revealing information about complex, emotionally laden subjects or for probing beyond public attitudes to the more covert private sentiments." There is some reason to believe that the supervised, but anonymous, questionnaire may be superior to the survey-interview under some circumstances.

In a book of this scope a few lapses are to be expected. For example in a discussion (p. 2) of problems that do not require the research process the following statement is made: "If one wishes to know whether local meat prices have risen within the last week, one need only consult a butcher or a housewife." Anyone who has dealt with cost of living indices or with sampling problems will find this a strange statement for an introductory chapter on methods of social research.

Apart from some excusable minor lapses of this kind, the book as a whole is a sound statement of the best current practices. A very desirable feature is the emphasis on the constant interaction between research steps. There is frequent indication that the actual sequence of a piece of research may involve steps out of "logical" order or a re-doing of earlier steps on the stimulus of later steps. In this connection, chapters which are particularly good are those on "The Research Process," "Research Design," and "Analysis and Interpretation."

This book is likely to become a standard work in its field.

RONALD FREEDMAN

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A GEOGRAPHIC STUDY OF WORLD POPULATION¹

THE author of this book is a geographer, but much of it is not specifically geographical except in a very wide sense of the

¹ George, Pierre: *INTRODUCTION A L'ÉTUDE GÉOGRAPHIQUE DE LA POPULATION DU MONDE*. Institut National d'Études Démographiques. Travaux et documents. Cahier No. 14, Paris, 1951, 284 pages. 600 francs.

term. The author says in his preface that he has tried to write a study of the relations between the numbers in large or small human collectivities and the facts of economic and social structure. To such a study many disciplines must contribute. "A single rule had, it seemed to me, to be observed so as to ensure the geographical character of the study: never to lose sight of the intimate connection (*solidarité*) between all the facts and all the developments, also the connection between past and present or, if one prefers, between time and space." (p. 10)

The book is divided into two main parts dealing with "the geographical distribution of population" and "population changes." The first part opens with an introductory section on the value and comparability of population statistics and a general review of the distribution of population over the world. This is followed by a discussion of the geographical distribution of the population of the world in relation to climate, altitude, energy, and mineral resources. After chapters on "systems of economic and social organization," and on "rural and urban populations," a scheme of classifying populations into types according to the occupational composition is introduced and followed by a discussion of the characteristics and development of the various types. A "critical study of the concepts of over-population and optimum population" concludes the first part.

After sections on methodological and statistical matters the second part contains a chapter on types of natural increase, chapters on internal migration and international migration, and a short final chapter, the title of which is perhaps best rendered into American English as "The ethnic composition of populations and resulting problems."

The subjects discussed are treated on a world scale. There is much more concentration on French materials in the sources used than in the subject matter covered. The author in many places presents suggestions for future research rather than final conclusions.

The book seems to be aimed at readers with knowledge of geography rather than demography. The sections dealing with demographic matter are fairly thoroughly documented with statistics, while the chapters on physical geography contain

rather a fairly extensive summary of the author's conclusions. In general he emphasizes that while the features of the physical environment may set certain limits, yet a wide variety of demographic conditions can exist in the same geographical setting. "No factor of the natural environment exercises a determining influence; the laws of population distribution, if there are such, are not physico-geographical." He distinguishes between the direct and indirect effect of physical environment on human societies. The direct effects are—except in certain climates—generally insignificant. The indirect effects which act on man's economic activities are more important. Even the arctic regions are, he argues, uninhabited less because of the difficulties of protecting the human body from the effects of cold than because it is hard to obtain food. However the influence of a certain natural environment on population varies with technological, economic and social conditions. A river may be a barrier at one period, a route of transport at another. In Europe, coal mining regions are places of the heaviest concentration of population, in the United States the mining regions are far from being the most densely settled. Moreover the geographical environment is in part a product of human activity. "Some features of the environment retain their dominance: the presence of the Alps in Europe, for example; but the original vegetation which was the complex result of topography, soil, local and general climatic conditions as well as the respective influence of variations in climate and of the resistance of the existing complexes of vegetation, has been completely transformed by human action. . . . New complexes are the work of man, the complexes of the cultivated plains and their parasites. Animal life has been similarly modified, rivers regulated, the riches of the subsoil realized. But action of this type has not always been continuous. The vicissitudes of history have eliminated human action from areas of varying size for longer or shorter periods. An apparently natural ("para-naturel") landscape has reappeared, often far removed from the original landscape, but seemingly exempt from human influence. . . . It would, therefore, be completely futile to attach any interest to cause-effect relations between phenomena which are believed natural, but are so only in part, and human activity,

continuous or discontinuous, which generates diverse forms of accumulation and proceeds in large part from other causes." (p. 67)

The same line of argument is used in the criticism of population density as a tool of analysis and, elsewhere in the book, in discussion of optimum population and overpopulation. Space, Mr. George insists, is in itself of limited significance for the development of human societies. In view of the variety of socio-economic and technological possibilities conceivable in any country it is difficult to assert that this or that population is "too large." Another concept which he subjects to criticism is the notion of "genre de vie" developed by Vidal de la Blache. He argues that while this notion can usefully be applied to primitive peoples, it is not a suitable tool for the geographic study of more complex societies, since in such societies there are many "styles of life." These are interrelated and are products of the economic and social structure. Changes of economic and social structure "determine all the forms of production, exchange, consumption and, consequently, the physiognomy of society with its most visible manifestations on the geographic level, residence, habitat, type of cities." (p. 77)

In the second part of the book the treatment is largely descriptive rather than theoretical. The distribution of space between subjects is unusual. Natural increase and the influences acting upon it receive little treatment—much less than migration. There is much interesting material on widely varied topics such as the distribution of economic functions between Paris and its suburbs or cultural pluralism in the United States. In the sections dealing with the more usual demographic rather than geographical topics the author seems less at ease and there is sometimes an impression of "scissors and paste." His treatment of statistical matters seems occasionally rather naive.

However the book will, unfortunately perhaps, arouse most interest on account of the author's political opinions. These are mentioned in a preface by Mr. Sauvy, director of the Institut National d'Études Démographiques (in whose series of monographs the book is published). While limiting its own work to empirical researches, the Institute has attempted to encourage the formulation of views on population by authoritative

scholars of diverse schools of thought. "It seemed useful," says Mr. Sauvy, "to give to an author of profound Marxist convictions the opportunity to write about problems of population." Marx himself and a great many of his followers have used strong language about Malthusianism and other "bourgeois doctrines" regarding population, but positive Marxian doctrine on the subject hardly exists. This book does nothing to fill this gap, though it must be said that the author himself makes no claims in this direction. The name of Marx, so far as the reviewer remembers, is not mentioned by him: on the other hand, the references to Malthus (e.g., on pages 162-163) are not disrespectful. His Marxism shows itself rather in adulation for the USSR and the other communist countries.

Mr. George's general emphasis on economic and social structure as the prime determinant of demographic phenomena is, of course, in line with Marxian thought, but it also very widely accepted by "bourgeois" demographers. It would have been interesting if the author had ventured into territory where important disagreements could be expected. The average non-Marxian demographer might very well agree with the treatment of "optimum population" and related topics in this book, so far as it goes. But he might argue that the author has neglected the influence of population growth on socio-economic development. For example one may agree that India is not "overpopulated" in the sense that there are "too many" people in the country, and one may yet consistently with this position argue that rapid population growth in a country which is often on the verge of famine is a very serious hindrance to the economic and social transformation which alone can finally raise the economic level of the Indian masses. Mr. George in his chapter on "types of natural increase" states that the present rapid growth of the population in India is likely to continue because for some time the death rate will probably fall faster than the birth rate. "The process which has begun," he continues, "makes necessary the realization by India of the imperious necessity of industrialization to solve the problems of the balance between resources and needs" (p. 205). The next sentence begins a section on Brazil.

The author's political opinions are in evidence mainly in the

chapters regarding the various economic types and their characteristics. Lack of space prevents a full description of these chapters. The classification into types is based on the distribution of the economically active population by main industrial groups (primary, secondary, tertiary). His first two types are the "agricultural" in which the percentage of persons engaged in primary production is over 60 per cent and a type which is "agricultural with subsidiary industrial activity" (he cites Italy, Japan, Venezuela). Then come the (capitalist) industrial countries, with an enlarged secondary and also a large tertiary (or "non-productive") sector which is swollen by the superfluous activities of bankers and speculators. The USSR is distinguished as a special type because the proportion employed in "non-productive" activities is relatively small while the proportion in secondary industry is as high as in some industrial countries. Mr. George neglects all questions of statistical comparability. However on his own figures for the distribution of the economically active population between the three groups at the 1939 census, the resemblance between the USSR in 1939 (46.4 per cent primary, 35.2 secondary and 18.4 tertiary) and for example Italy in 1936 (49, 28 and 23) is much closer than that between France (35.5, 31.0 and 33.5) and Great Britain (5.7, 47.0 and 47.2) which he classes together. Moreover, the industrial structure of the USSR has not been constant, nor has that of the capitalist countries. If, like Mr. George, one is not too particular about statistical comparability one need not hesitate to make historical comparisons. Data for many countries have been collected in Mr. Colin Clark's *CONDITIONS OF ECONOMIC PROGRESS*. It is not difficult to find stages in the history of several capitalist countries at which their industrial structure, in terms of the three broad categories, belonged clearly to "the type of the Union of Soviet Socialist Republics," as the percentages in the accompanying table show.

Matters get even stranger when it turns out that the communist countries of Eastern Europe and even China belong to the same type as the USSR, though sometimes sub-types are distinguished according to the "stage of development previously reached" (i.e., evidently before they became communist countries). A principle of daring originality has here been in-

Industrial Group	France (1866)	Germany (1882)	Italy (1881)	Ireland (1841)	U.S.S.R. (1939)
TOTAL	100	100.0	100.0	100.0	100.0
Productive	81	80.8	83.2	85.3	81.6
Agricultural	43	41.9	46.3	50.8	46.4
Nonagricultural	38	38.9	36.9	34.5	35.2
Nonproductive	19	19.2	16.8	14.7	18.4

roduced—that of classifying the economic and demographic status of countries not by observable realities but by the professed intentions of their regimes. Mr. George has developed a few applications of his principle—for example in his discussion of the future population of the USSR. In a country where (in contrast with capitalist economies) “the masses have an interest in increasing the distributive power of a system of which they benefit directly” and where more and more people are needed and welcomed, the rate of growth must be high and continue to be high. This argument is irrefutable because, as is stated earlier in the book (p. 18), “the Soviet Union does not publish demographic statistics.” A universal application of Mr. George’s principle would be a pleasing innovation for, according to the plans of their governments, most countries would appear to belong to a prosperous industrial type. However, like many innovators Mr. George has not perceived the full possibilities of his discovery. For example, he classifies Yugoslavia simply as agricultural. He has apparently failed to notice that Marshal Tito plans to industrialize his country.

J. HAJNAL

